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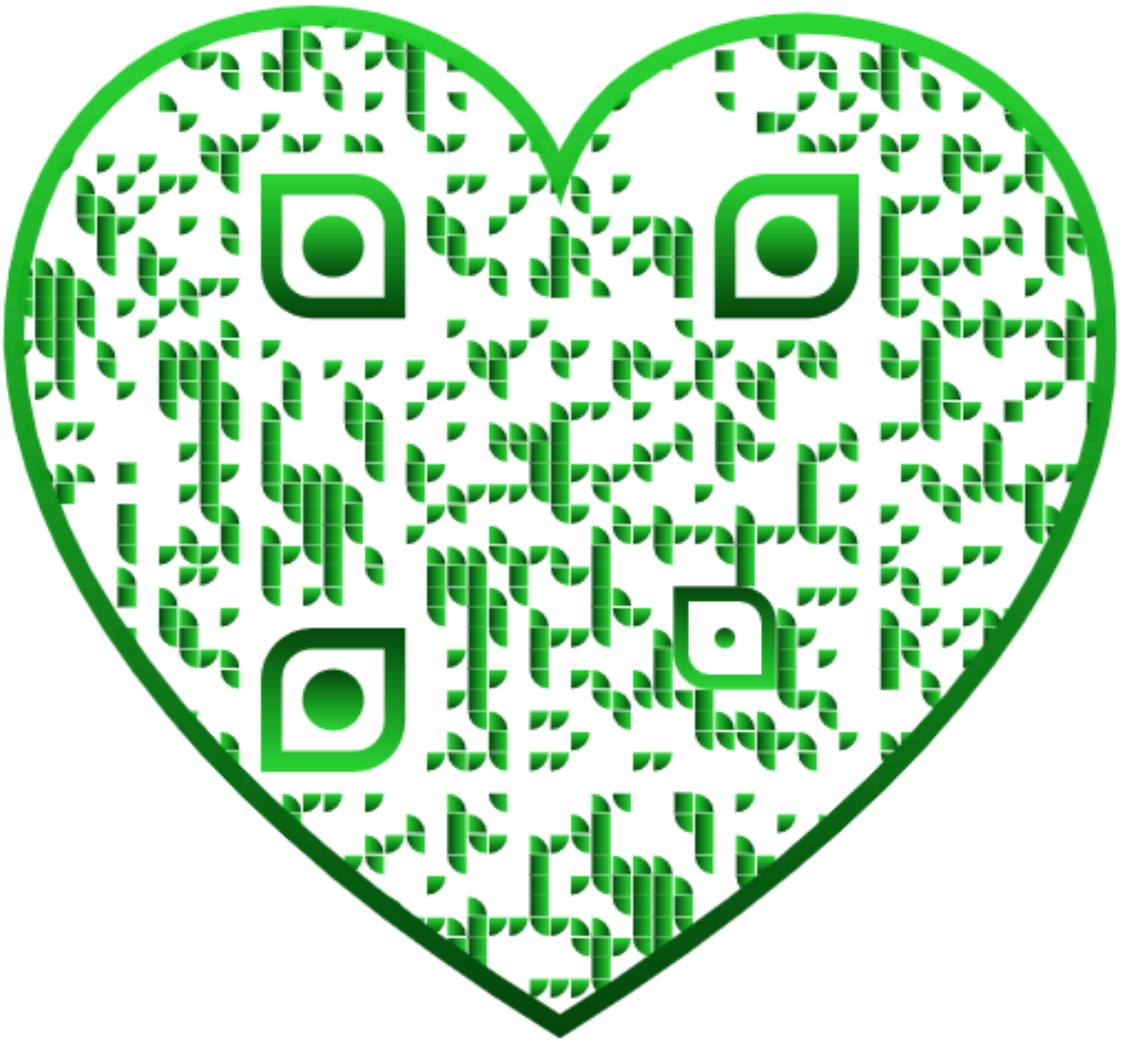

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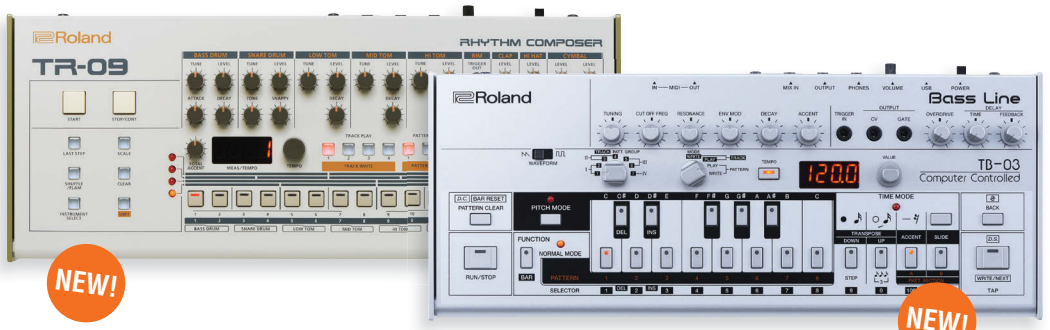

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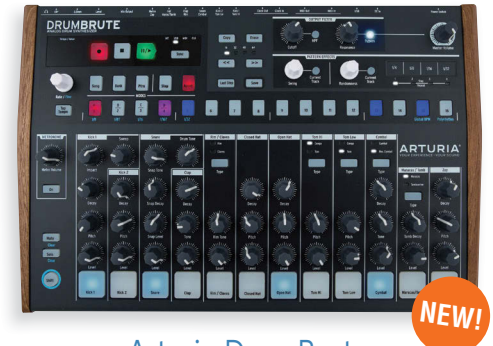

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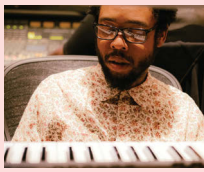

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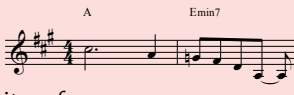
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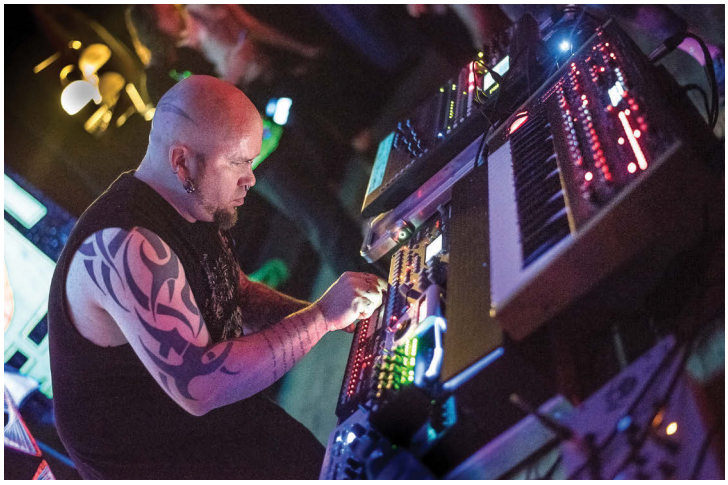

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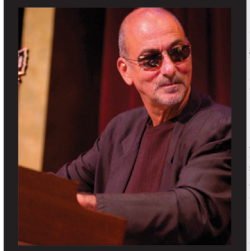

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TALK

Editor's Note

EDITOR'S PHOTO BY ISABELLA INDIESIGH

Few gigs test your musicianship like theatrical work. In addition to having solid chops, you must be capable of giving consistently high-quality performances night after night, with full awareness of everything happening around you. You have to be able to listen for and react to cues from actors, watch the conductor for subtle tempo shifts, and vamp or jump to the next number at a moment's notice, smoothly and without distracting the audience. Just as it is with film music, you're most successful when the audience doesn't realize you're there.

For a taste of what it takes to make it on Broadway, we talk to Alex Lacamoire, whose hard work and versatility have earned him the highly coveted spot of music director for the hottest show in the country, *Hamilton*. And from multi-instrumentalist Seth Stachowski, we get exclusive peek inside the pit of Cirque du Soleil's *Paramour* on Broadway.

Of course, theatrical gigs are not limited to the Big Apple. Every major city has a theater district, with shows ranging from big-production musicals to modest one-act plays. And don't forget Las Vegas where, in addition to solo gigs and band work, there is a wide variety of performance opportunities for hard working keyboardists.

But whether or not you're interested in playing in an orchestra pit, preparing for the demands of this type of gig will benefit every keyboardist pursuing a professional music career.

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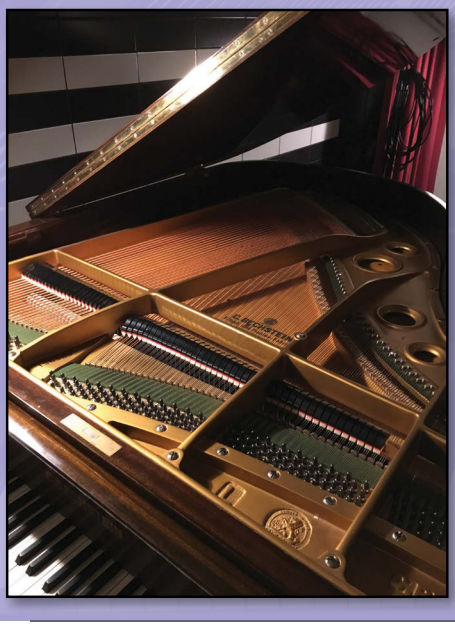

Be Prepared to Be Prepared

Get the piano details before you get to the gig.

Two consecutive concerts, two wildly different pianos—it's nothing unusual for a touring musician. Most players just deal with whatever they get. But what if the piano's interior is more important to your gig than the keyboard action itself?

I recently spent two weeks workshopping a theater piece that featured a prepared grand piano onstage. The biggest challenge was adapting the required sound palette to a new instrument in each venue. Because the interior layout of pianos differ depending on the make and model, it can be difficult to play certain notes with, say, an ebow due to structural variations between instruments in different venues. Check out the two instruments pictured—a vintage C. Bechstein and a newer Yamaha—and you'll see differences in string lengths and proportions, in crossover points of the middle- and low-register strings, and in the bracing features of the harp. So how does one stay prepared, so to speak?

When booking a show where I plan to work directly on the strings, I always ask ahead of time if it's okay to add preparations and what kinds of materials would the piano owner prefer I don't use (such as metal screws or dimes). I also ask for the make and model of the piano and request a photo of its interior so I can plan ahead for areas of the instrument that are difficult to access. And if I am playing a model that I haven't seen before, I snap a photo (with the preparations inside) to remember the details, in case I run into that same model in the future.

If you are interested in exploring techniques for playing directly on the strings of a grand piano, visit keyboardmag.com to see some of the materials that are commonly used and to learn how to prepare the instrument without causing damage. Gino Robair

Key Secrets

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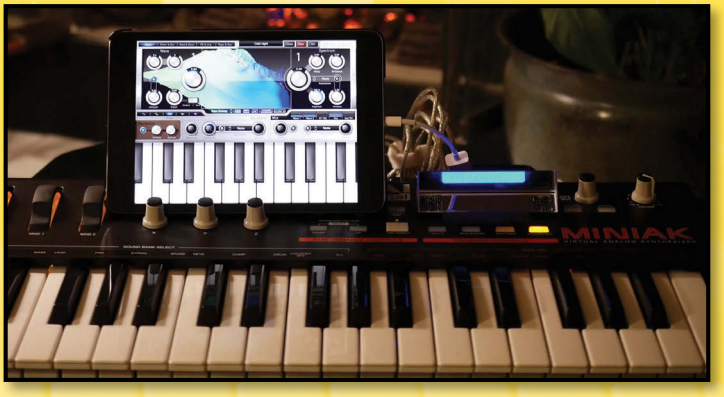
Here's an easy way to get more expressive solo sounds: Grab a MIDI cable and layer a punchy lead from a monophonic synth with a swelling pad on a polyphonic one. When you play quickly, you hear just the monosynth. Hold individual notes longer, and the pad sneaks in behind, adding ambience. Play an arpeggio and hold all the notes, and a chord echoes the melody in call-and-response fashion. You can then bend or modulate the chord to add more surprise. Mixing analog and digital synths heightens the contrast. I especially like the combination of smooth sawtooth leads with glassy wavetable chords. (Tweak the attack and decay to suit your playing style.) Visit keyboardmag.com for audio examples. David Battino



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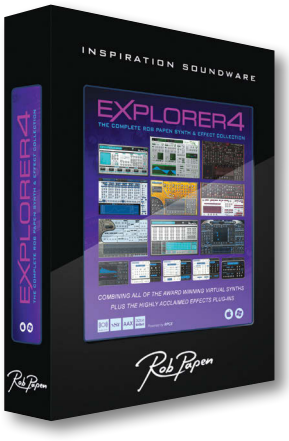

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The Alternate History of the Quartertone Piano

ALOIS HÁBA AND THE CZECH SCHOOL OF MICROTONAL MUSIC.

BY MATTHEW GOODHEART

IN *THE MAN IN THE HIGH CASTLE*, SCIENCE FICTION AUTHOR PHILLIP K. DICK imagines a history where the U.S. lost World War II. Among the many things examined in the book and the current TV series based on it is the effect of the military occupation on art. This dystopic world, however, is not merely speculative science fiction; it is rooted in fact. Historical records document the Nazi regime's control and censorship of art, designating the contemporary arts as "degenerate" and associating them with Communism, Jewishness, and anti-German sentiments worthy of suppression.

While *The Man in the High Castle* does not examine music outright, in real history the course of musical practices, including instrument design, was deeply affected by the war. Though many artistic movements survived WWII and flourished afterwards, others were severely curtailed, if not altogether extinguished. One is easily drawn to invert Dick's alternate history and ask: What if the war had never happened? It is with this spirit of speculative re-examination that we turn our attention to the Czech school of microtonal music led by Alois Hába, and the remarkable quartertone piano that stood at its center.

The Path to 12-Tone Equal Temperament

When one sits at the modern piano keyboard, a quick reflection reveals the organic integration of keyboard design with equal-tempered tuning. The chromatic half-step division of the keyboard's octave maps the twelve equal divisions of equal temperament. The modern keyboard is a common-sense arrangement that allows for both the equal sounding of every tonal center and the comfortable execution of dissonant and non-tonal harmonies. The tuning and the keyboard reflect each other. But this design came about slowly, and not without dissent.

The idea of equal temperament is an ancient one. It goes back many thousands of years in traditional Chinese music and seems to have been theorized by Aristoxenus of Tarentum in the 4th century BCE. It made its first appearance in modern Europe in 1580 when Vincenzo Galilei, grandfather of Galileo Galilei, began advocating for an equal tempered tuning in lutes, though there was vociferous opposition. Scholars disagree as to when equal temperament became the standard for keyboard instruments, but suffice it to say that the idea of the unity of the 12 keys of the keyboard and the 12 equal divisions of the octave gradually converged over the course of the Classical and Romantic eras.

Even as this convergence took hold, other ideas were afoot. Quartertones, pitches that reside in between the two notes of a half step, had historical precedents in Ancient Greece, while in Arab music they had been in use since at least the 10th Century. In Europe, quartertones received occasional consideration in the 15th and 17th Centuries, but made

their first modern appearance in 1849 when Fromental Halévy's *Prométhée enchaîné* used them in imitation of Ancient Greek harmonies. Three years later, the remarkable composer, author, and political revolutionary Johanna Kinkel wrote that Chopin's chromaticism was an attempt to reach for notes in between the keys, stating "Emancipate the quartertone, so you have a new world of music!"

Things changed in 1892 with G.A. Behrens-Senegalden's "achromatishes" quartertone piano, containing a cleverly designed keyboard that fit a set of slightly raised quartertone keys *between* the white and black sets. From 1902 to 1912, quartertone harmoniums were built by Max Meyer, Josef Anton Gruss, and Jörg Mager. In 1915, Mager published a book on his theories called *Vierteltonmusik* (Quartertone Music). That same year Willi von Möllendorf constructed a "bichromatic harmonium" using a keyboard design based on the standard black and white key arrangement with an additional set of gapped quartertone "brown" keys, and in 1917, Möllendorf published *Musik mit Vierteltönen Erfahrungen am bichromatischen Harmonium* (Music with Quarter Tones: Experiences at the bichromatic harmonium).

The Notes In-between

At the end of the first World War, the young Czech composer Alois Hába, who was living in Vienna after serving in the Austrian army, read about a lecture by Möllendorf in the newspaper. Having grown up performing in his father's Moravian folk-music band, Hába was interested in the differences between folk music intonation and that of the classical tradition. Inspired, he composed his first quartertone work entitled *Suite for Orchestra* and began studying with Franz Schreker at the Vienna Music Academy.

In 1920, Schrecker moved to Berlin to become director of the Hochschule für Musik, and Hába followed him. It was in Berlin that Hába met a variety of composers interested in microtonality and instrument design, including Möllendorf, Mager, Julián Carillo, Feruccio Busoni, Arthur Lourié, and Richard Stein. Hába also met Ivan Vsychnegradksy, a Russian composer who, at the time, was experimenting with compositions that used two upright pianos tuned a quartertone apart. He had also worked with the Pleyel company to create a two manual quartertone "pneumatic-transmission" player piano but was unhappy with the result.

The meeting between Hába and Vyschnegradsky was highly influential on both men. Some time between 1923 and 1924, Vyschnegradsky, either alone or with Hába, contacted the Grotrian-Steinweg company to build a quartertone piano, though sources disagree on whether or not it was actually built. Hába, however, successfully worked with the August Förster company to produce a quartertone grand piano (see Figure 1). This massive instrument was essentially a double piano. The body contains two stacked harps tuned a quartertone apart, while the keyboard features three manuals; the center manual sounded the standard tuning while the outer manuals sounded a quartertone flat. This ingenious keyboard design allows for fluid movement between standard pitches and quartertones while maintaining a foundation in traditional piano technique. Rather than learning a new keyboard, a pianist could simply expand their technique to include the outer manuals (see Figure 2). August Förster used this keyboard for an upright quartertone piano for Vyschnedgradsky in 1928, while a second quartertone grand piano was sent to a conservatory in Cairo (see Figure 3).

In Berlin, Richard Stein hosted the International Quarter-Tone Congress at his flat in 1922, with Hába in attendance. Hába himself sought to create a department of quartertone and sixth-tone music at the Hoschules. This effort proved unfruitful, and in 1923 Hába returned to Prague, where he soon began teaching workshops in microtonal music at the Conservatory, writing *New Harmony-Textbook of the Diatonic, Chromatic, Quarter-, Third-, Sixth-, and Twelfth-tone Systems* in 1925. His music became referred to as Musik der Freiheit (liberated music), though this term had as much to do with his athematic style as it did with his use of microtonality.

Hába's efforts at instrument design continued. In 1931, August Förster produced two more quartertone uprights, and by the mid-'30s Hába had produced two quartertone clarinets, a quartertone trumpet, four quartertone harmoniums (both cabinet and collapsible), and two sixth-tone harmoniums. Other composers and artists began to collect around him, perhaps most prominently the pianist and composer Erwin Schulhoff, who is considered the first master of the quartertone piano. In 1933 Josef Suk became head of the Prague Conservatory, and Hába began teaching at the Conservatory in earnest. By 1934, Hába had established a Department of Microtonal Music, attracting students from throughout Europe and even Egypt.

History Intervenes

This rising microtonal ferment, however, was about to collide head-on with political history. The fall of the Austro-Hungarian Empire at the end of the WWI had left a majority of native German-speaking peoples in border districts of the Czechoslovak Republic, an area that came to be called the Sudentland. During the 1930s, with the majority of Czechs and Slovaks divided among several political parties, the pro-Nazi Sudetendeutsche Partei (Sudeten German Party, or SdP) became the second largest political party in the Republic. Hilter soon encouraged the SdP to advocate for autonomy, a situation referred to as the Sudeten Crisis.

Composer Alois Hába posing with an August Förster quartertone upright piano.

Fig. 1: A piano-tuner's dream or nightmare? An inside look at the August Förster quartertone grand piano. (Courtesy of August Förster.)

Czechoslovakia was ostensibly protected by a military alliance with France and Britain, but in an effort to avoid military confrontation with Germany, both countries were signatories of the 1938 Munich Agreement, allowing Germany to annex the Sudetenland. Notably absent from this agreement was Czechoslovakia itself. The fragile Republic began to dissolve, and in 1939 Hitler informed President Emil Hácha of his imminent invasion, threatening Prague with aerial bombardment. Hácha, seeing no other option,

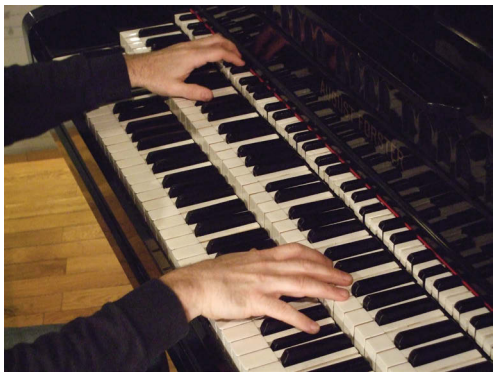

Fig. 2: The strength of this particular key arrangement is that it is relatively easy for pianists to adapt their playing technique to include quartertone pitches by accessing the notes above and below the middle keyboard.

ordered the Czech troops to stand down. On March 18, 1939, from the walls of the Prague Castle, Hitler declared the Czechoslovakian lands a Protectorate of Germany.

Hába was subsequently declared a "degenerate artist" along with a majority of his students. Performances of his works were banned, and the Conservatory was shut down. Karel Reiner, a Jew, suffered internment at the Theresienstadt, Auschwitz, and Dachau concentration camps, though he ultimately survived the war despite being forced into a death march during its final days. Erwin Schulhoff, who was Jewish, homosexual, and a Communist, died of tuberculosis in the Wülzburg concentration camp.

Post-War Setbacks

Following the war, the Czech school attempted to reconstitute itself. The Conservatory reopened, Hába became a Professor of Composition, and the Department of Microtonal Music was re-established.

In the 1946 elections, the Communist Party of Czechoslovakia, which had declared itself dedicated to democratic governance, won a majority. However, soon political alliances began to fracture and in February of 1948, with the backing of the Soviet Union, the Communist Party staged a coup and Czechoslovakia fell under Soviet dominance. While Hába's compositional style changed to reflect the aesthetics of Socialist Realism, becoming more tonal and incorporating folk melodies, Hába soon came under accusations of being a "formalist." By the Fall of 1948, the Department of Microtonal Music was shut down, and Hába was soon forced out of the school.

Despite these impediments, Hába continued to compose. While somewhat isolated behind the Iron Curtain, his works were occasionally performed, he

Fig. 3: The harp and string arrangement is clearly visible in this 1928 photo of a quartertone upright piano. (Courtesy of August Förster.)

attended the Darmstadt Summer Courses in 1956, and he maintained an influential role on musical pedagogy in the Eastern Bloc. However, access to the quartertone piano proved difficult, and Hába's final work for the instrument dates from 1959.

Many of his late works are quite evocative, and his *String Quartet in Fifthtones* from 1967 demonstrates a mature composer at the height of his powers. However, this and other works tend to stand in isolation, similar to the works of Vyschnegradsky or Harry Partch; a singular creative force working predominantly within their own world. Following Hába's death in 1973, the quartertone grand piano was moved from the Conservatory to the National Music Museum where it currently sits on display along with the quartertone clarinets, trumpet, and a sixthtone harmonium (see Figure 4). Today, one of the remaining quartertone upright pianos sits in the Music Theory wing of the Academy of Performing Arts, largely unused.

Imagining Possibilities

When examining this history, the promise of the Czech microtonal school seems apparent. The open artistic environment of inter-war Prague, the institutionalization of pedagogical approaches, the growing

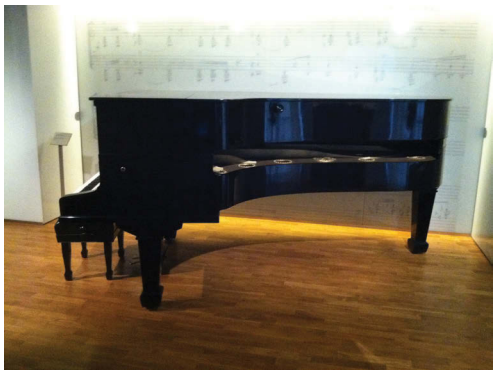

Fig. 4: Viewed from the side, you get a sense of the enormity of the August Förster quartertone grand piano with its dual harps.

school of composers and performers, and the standardization of instrument design, all came together during a time of growing national identity. The temptation to speculate about a different history where the fledgling Czechoslovak Republic had remained free from the dominance of the Nazi and Soviet regimes—an inversion of *The Man in the High Castle*—is almost irresistible.

While quartertones may seem strange and harsh to those solely attuned to traditional tonalities, the history of temperament itself demonstrates a steady progression of previously rejected sounds becoming more acceptable with familiarity. One only has to read the polemics against Vincenzo Galilei's tuning propositions to see how difficult equal temperament was to accept for some. Likewise, the idea of a growing familiarity and acceptance of quartertone microtonality is not out of the question had the "Hába School" continued. It is easy to imagine how this increasingly prominent music may have intersected more thoroughly with like-minded composers such as Ives, Couper, Carillo, or Rimsky-Korsakov into the '40s, '50s and beyond. And in the midst of this intersection would have been the quartertone piano.

It is doubtful that the quartertone keyboard would have supplanted our ubiquitous one, but it does not seem too much of a stretch to think that the possibilities inherent in the design would have inspired more than a few composers across Europe and the U.S. Had the Hába/Vyschnegradsky design been common knowledge, it seems plausible that the idea of connecting such a flexible keyboard to the dynamism of electronic synthesis would have inevitably arisen. Had this merging taken place, the possibilities seem endless. ♫

An expanded version of this article, with links to further reading about quartertone music, is available online.

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ALEX LACAMOIRE

TAKING *HAMILTON* AND OTHER BROADWAY HITS TO NEW MUSICAL HEIGHTS

BY JON REGEN | PHOTOGRAPHY BY JUAN PATINO

***HAMILTON* HAS WON 11 TONY AWARDS, A GRAMMY, AND A PULITZER PRIZE.** Its soundtrack went to Number One on the Billboard Rap chart, and the newly released collection of covers and remixes of the show's songs just debuted at Number One on the Billboard 200 chart. *Hamilton* is a phenomenon, and Alex Lacamoire is its musical director and orchestrator.

But before his name became synonymous with that "ten-dollar Founding Father without a father," Lacamoire had already built a reputation as a musical wunderkind, with an ESP-like ability to accompany, arrange, and wrestle a musical idea into shape. From his humble beginnings as the rehearsal pianist for *The Lion King* to storied successes with shows like *Wicked* and *In the Heights*, Lacamoire continues to be one of the most sought after musicians on the planet.

Backstage before yet another sold-out performance of *Hamilton*, Lacamoire talked to me about his unquenchable quest for musical excellence.

Let's talk a little about your history. I read that your family is Cuban, you grew-up in Los Angeles, and you later you moved to Miami. Was there a lot of music in the house when you were growing up?

Funny enough, the one person that really wanted to hear music around the house was *me*. I do have early memories of there being a huge record player in my living room. These were the old days when a piece of furniture was the record player. It was a huge console, the size of a couch. I do remember my Mom playing Julio Iglesias records, and I remember loving this one opening song of this record: "Me Olvidé de Vivir." I was also told that when I was two years old, I would hear music coming out of the speakers and just stare at the speakers, transfixed. So, clearly, music was something I was very drawn to.

My parents *did* buy me a KISS record player when I was a kid—one that you kind of opened and closed, almost like a lunchbox. You opened the lid, and the inside had pictures of all four dudes! I was told that I was so attuned to music that I knew what song I wanted to hear before I could read words, because I knew what the design of the 45 [rpm vinyl record] looked like. I knew either what the sleeve was, or I knew what the logo for the record label was. This was when I was in Los Angeles, and still a kid, at around four years-old.

What kinds of things grabbed you musically from the beginning?

I think I used to start by playing the song "Music Box Dancer." I tried to play it on my toy piano. I was drawn to pop music a lot. I started with the classics; I played the Clementi sonatas and the Hanon exercises and all that stuff. But in terms of music I would *choose* to listen to? We're talking about the early 1980's, so it was the Thompson Twins, Cyndi Lauper, Madonna—I was all about that stuff. I was super into all of the music of the MTV era. Eventually, I would make mixtapes for myself of songs from the radio.

Funny enough, it wasn't until much later that I tried to play those songs on the piano. And that's where I developed my ear.

So you started working on getting your musical fundamentals together?

Yeah. In fact, one of my favorite first piano teachers was young. We're talking about when I was four or five years-old. My teacher was probably a teenager, maybe 17 or 18 years old, and she wasn't like a concert pianist; she was just a typical gal who had studied music with another teacher. Apparently, legend has it, that this teacher went to *her* teacher crying because she was so distraught, saying, "Oh my God, I've taught this boy everything I know how to do, and I've run out of things to teach him! Can you please teach him for me?" I guess I kind of outgrew her. So eventually I started studying with her teacher, a woman named Raquel Achon. For me, she was my first true piano teacher. I started studying with her when I was six or seven, and what was great about her was that she taught me theory along with my piano education. She was the one that, along with teaching me how to play my exercises, gave me assignments and lessons about what accidentals were in which key signature, and how to read and write music. Of

course, it was like bad medicine at the time – stuff that I didn't *want* to be studying, but it was great to have that foundation.

I remember being obsessed with the [Vangelis] song "Chariots of Fire" when the movie came out. I thought the theme was so beautiful, I brought it to my piano teacher Raquel, saying, "I want to learn how to play 'Chariots of Fire'!" And she said to me, "No, Alex, this is too advanced. It's in the key of *D* flat, with five flats." But I was not one to take "No" for an answer. So despite what she had said, I went home and, because of what she had taught me about key signatures, I learned how to play the first four measures of the song. When she saw how determined I was, she said, "Alright, this kid really wants to do this." So that's an example of me really pushing myself.

How old were you at that time?

I was six or seven, because that movie had just come out [1981].

You spoke about your musical curiosity in an interview last year, saying "I would try to play songs on the piano, and I would notice that the sheet music didn't have all of the cool things… It was missing the guitar solo, and I wanted to know how that fit in." Can you talk about that desire to go beyond the sheet-music page?

For me, it was about wanting to know how people do what they do. So, if there's a song that I like, I want to play the *whole* song. Maybe that's my perfectionist-OCD streak of needing to do the entire thing, and if I didn't have the sheet music in front of me, I needed to find ways to create it. I still remember one day transcribing a song that I liked by the band Cutting Crew called "The Great One-Handed Brag." I stayed-up one night, I think it was two days before Christmas, and I started transcribing the piano part just because I liked the way it sounded. I started at 10:00 p.m. and I kept transcribing until five o'clock in the morning. I was obsessed and I had to get to the end of the song. That's the part of me that's relentless and always searching. It's a quest.

I read that you studied jazz, arranging, and film scoring at the Berklee College of Music. Was there ever a time that you wanted to focus on being a solo performer?

Absolutely. When I was a teenager late in high school, I wanted to be Billy Joel. That would have been the dream. But I can't really sing or write songs. [Laughs]

I guess I just liked the idea of being onstage and making music and performing. When I got to Berklee, I thought I wanted to be a jazz pianist. I thought I would graduate and be Keith [Jarrett] and live that life. But I wasn't really that good. I learned that years later. For whatever reason, the theater aspect was just something that I was really suited for. I guess it was because I liked to play groove stuff, I was very curious about arranging, I could sight-transpose, I had a good memory, and I could be precise when I needed to be, in terms of the *routine* of a song. Theater just spoke to me, and I felt suited for it.

After graduating from Berklee, did you come to New York right away?

No, I stuck around in Boston for about three years, working on *The Spirit of Boston*, which is a three-hour cruise boat that takes off from Boston harbor. I was in what they call a "GB" or "General Business," club-date band, where my job was to play [songs like] "Great Balls of Fire," or "The Macarena," or "Peaceful Easy Feeling." I would sing "Just the Way You Are" and play it on piano.

Did you enjoy that?

I absolutely did, because it was Top 40 and I'm a kid of the '80s! I dig pop music, and also on this gig, during the first half hour I would be playing "cocktail jazz." So, I would get my Keith Jarrett "Ya Ya's" out playing that stuff, as well as getting to play "Better Man" by Pearl Jam, on a guitar sound on the keyboards! I thought it was a blast. During the day, I did transcriptions for people, and I played lessons at the Boston Conservatory, so I got my repertoire for theater happening on the side. I even wormed my way into a John Zorn avant-garde noise ensemble at New England Conservatory, even though I wasn't a student there.

After three years, I decided to go to New York in 1998 because I had been there on visits and I felt the electricity of the city and knew I wanted to be in it. As luck would have it, a month before I moved there, I met the music director of *The Lion King* in Boston. They were doing a talent search in Boston, and they needed an audition pianist. So I was that pianist, playing for people who wanted to audition to be in *The Lion King* on Broadway. The music director from Broadway Joe Church and his associate Cynthia Kortman flew into Boston and heard me play. Now mind you, I was the audition pianist, so I wasn't the focus of the day, but yet the music director heard me play Stevie Wonder songs, he heard me groove, he saw me transpose on sight and play things by ear, and he said, "Alex, I hear you're moving to New York in a month. When you get there, call me." So I moved to New York on a Sunday, and that following Saturday, I was in the pit for *The Lion King*, looking at the books, studying *everything*. And as luck would have it, this music director Joe Church who was completely instrumental for my career, basically said, "Alex, you should be subbing on Key[board] 1, and playing rehearsal piano and auditions for us." So I kind of became a "first call" guy over there.

You were probably thinking that you'd be waiting tables when you got to New York, like most struggling artists do!

You have no idea! I'm not joking when I tell you that my bank account had literally $100 in it. Period. If I ordered a sandwich from a deli, I wouldn't order the cheese so I could save 50

ANITA SHEVITT

HAMILTON CREATOR LIN-MANUEL MIRANDA ON ALEX LACAMOIRE

"If Alex Lacamoire didn't exist, I'd have to invent him. He came along in my life at a time when I was looking for a musical director as conversant in Latin styles as hip-hop, R&B, and the musical theater of my youth. And in walks Lacamoire, spoon-raised on Miami-Cuban rhythms, with his heart in the far out prog rock of Steely Dan and Rush. We just sort of started working together and never stopped.

"Musical sensibilities aside, Alex's meticulousness both as an arranger and orchestrator is always invaluable. He has the same patience when staffing musicians as he does filling out a four-part vocal harmony in a chord. He is beloved by actors and musicians alike because he loves them, and brings out their best.

"What else? He's just the f—king best there is. And I'm so lucky to be on his team."

– Lin-Manuel Miranda

cents. So I was completely lucky. I was in the right place at the right time, but again, all of the preparation I had done led me to that point.

What happened next?

I subbed and played rehearsals and auditions for *The Lion King*, and I also played auditions for other shows like *Rent* and *Man of La Mancha*. I met other composers, and through that I met Steven Schwartz, who's the composer for *Wicked* and someone I idolized as a kid because he composed *Pippin* and *Godspell* and all the shows that I loved when I was growing up. Schwartz heard me play as the audition pianist, and after the fourth audition, he said, "Alex, you sound really good. I'd like your card." Steven introduced me to the director Scott Schwartz, who directed *Bat Boy: The Musical* which I became the music director for. That happened because they wanted to do a reading and they needed someone to be the music director for little to no pay, so they needed someone who was young and hungry. And that was me!

What did the job of music director involve on that show?

It involved playing the piano, teaching the vocals to the actors, leading the band, and being the executor of stuff so that the writer could listen, observe, and critique his own work. At that point, I was just the music director for *Bat Boy*, but then the show moved to Off-Broadway and it needed an arranger and an orchestrator. So the composer and I raised our hands and said, "We'll do it!" And that's how that happened. *Bat Boy* was my big "breakout" show, in 2001. It was the first show that I music directed professionally. It was my first Off-Broadway show, and where I cut my teeth being "in charge" and the leader of a department, dealing with musicians, working with a music copyist and keyboard programmer. I learned a *lot*.

Looking back, why do you think you were so successful early on? Was it that combination of skills and drive?

All of that. But it was also my *people* skills. My mama raised me right. You thank people when they do something nice. You don't overstay your welcome, and you're appreciative and not overbearing. It's all of that stuff.

I read a quote by you about your work with Lin-Manuel Miranda in the show *In the Heights* where you said, *"We had a Latin-American artist writing Latin-American music, as opposed to someone else trying to write in that style and pay homage to it…"* As someone who grew-up in Latin family, did working on the music for that show feel familiar, or did it feel strangely foreign to you?

It was both. It felt natural in the sense that I recognized the music. I felt it in my bones from having grown-up listening to Salsa music. It wasn't something that I ever put-on - I just listened to it because I was exposed to it. When I was in a car, my parents would be listening to it. Or when I was at a Christmas party, somebody would be blasting music to dance to for four hours. So you can't help but just hear that hypnotic, trance-like *tumbao*. That became part of my DNA.

But in terms of the mechanics of writing it down and trying to notate it? I absolutely studied books. I read Rebeca Mauleón's book [*The Salsa Guidebook*] about writing for Latin music—what it looks like and the terminology, like "Oh, this is what the bongos do," and, "This is called the *martillo*," etc. So I absolutely had to explore and listen, and it was very foreign to me, in terms of expressing to someone how to do it. Because that's my job as an orchestrator: to notate it. It's precision work, being specific about what something needs to be so that it can be consistent from night to night, and that it delivers what the story needs to deliver for the people on the stage and for the audience watching. You don't leave a lot up to chance.

That brings us to the phenomenon of *Hamilton*. There's a great video online of you delving into the title song, showing how you dance around a melody and lyric. How do you develop and prod it without ever stepping on it?

Well, in theater, what the actor is singing and speaking about is king. That's where the focus needs to be, so you can't step on that. I'm in a service industry; you know what I mean?

I'm writing charts for a producer who needs me to write them, and I'm doing arrangements for a composer who needs me to do them for him. I'm doing something for somebody else, so it's not really about me saying, "Look at me!" My job is really to help a story be told. Leave a hole, get out of the way of the melody, make sure the lyrics are being heard—that's why I do what I do.

It seems like the collaboration must be a thrill for you.

Yes, because I feel like you make better music when you have someone giving you encouragement, or a critique to make something better for whatever reason. I think you come up with better things that way. I don't think it's as fun to be in a vacuum. I think that's why the theater aspect of music felt so fun to me. The solitary aspect of being in a practice room and practicing your scales and modes gets to be very lonely! I'd much rather be with people, and also, I know what I'm good at, and that's enhancing something. I'm much better at working *with* something than creating something out of nothing.

Can you talk a little about the way you and Lin collaborated on *Hamilton*?

Lin leaves that space for me because he doesn't get bogged-down in the details so much of the actual writing down of the music or the sounds. He's more like a "big picture" guy, as in, "Here's the melody, here's the lyrics, here's the chords, here's the *structure*. He does that in a demo, and then he hands it off to me.

Are his demos on piano?

He uses a keyboard and he works in [Apple] Logic. He finds the sounds, he finds the drum loops, he plays the bass lines, he plays the hooks. But then it's up to me to actually have other people do that for us. Lin knows that he can give me the keys to the car. He would send me his Logic demos so I could then go in and solo all of the different parts and see exactly what sounds he used. In terms of gear, I use an 88-key, weighted Yamaha keyboard along with Logic. I also use [Apple] Mainstage and I like sounds from Massive and Kontakt. I've also dabbled with sounds from EastWest. I orchestrate in Finale, and I can poke around in Pro Tools, but Logic is my main software.

Why do you use Logic over Pro Tools?

Well, I think Logic is more for *songwriting*. I think Pro Tools is great for recording, but I don't think their MIDI capability is nearly as expansive and intuitive as Logic. In Logic, I'm able to find a bunch of loops easily. I don't know how to do that easily in Pro Tools. I find it's a pain in the butt just to call up a piano sound. You have to open-up two different windows in Pro Tools! I just like the palette in Logic, and I find it to be user-friendly.

Does Lin give you a finished enough demo that you know what's going on?

Absolutely. And his demos are so *clear* that you know what things are supposed to sound like. Even if there aren't complete vocal harmonies, I'll be like, "Oh, that's where harmonies can go." And even if it's a very spare demo with just a bass line and a piano playing one note, I can tell what the chords in-between need to be so I can discern what the guitar should be playing, or what strings should be playing in that middle register. So if he's done the extremes of the bass and the treble, I can do the midrange.

We don't always do a lot of "side by side" work. He lets me do my thing, and then he hears it when it's pretty much done, like when the band is finished rehearsing it, or after I've taught the vocals to the ensemble or the cast. Then he'll hear it and either give his approval, or he'll say, "I liked this but I didn't like that," or, "That was great, but let's try *this* instead." It's a collaborative process.

Hip-hop has found its way into just about every conceivable musical scenario, including *Hamilton*, where you marry programmed beats with live performance. Is that the happy medium for you—the intermingling of both disciplines?

It's interesting because I think that's where music is heading. I like the human element; I'm old-school in that respect: I still like that human connection that you get from playing. But obviously, the world is moving in a digital direction, so finding ways to harness that [musically] is fantastic, because it sounds modern. It sounds hip and it sounds current.

Do you play other instruments besides keyboards?

Yes. You're not going to hire me to play a gig on guitar, although at one point, I *did* have enough guitar chops to sub on the show *Rent*. On that show, the way it's orchestrated is that the second keyboard player has to play keyboards, acoustic guitar, and electric guitar. So I can get around enough on guitar to be able to write out specific voicings, and play things out and have them be guitar-istic. I can do the same thing on bass and drums too. I can figure out what it is that I'm looking for because I'm always *listening*.

It seems like all of the musical investigation you have done, even early on, prepared you for what you do now.

Yes. One thousand percent, because what I do isn't just about playing piano – it's about theory and harmony, and colors, and listening and playing – the totality of everything that I've learned. All of that trial and error led me to where I am. Being a music director is so much more than just sitting down at a piano.

I think the best way to describe it for me is that I know when something feels right. Someone may listen to a chart that I consider half-done and think, "Oh, that's done!" But there's something in me that is uneasy and won't rest until it's right. It's about asking myself, "What can I do to make this better or sound fuller?" I feel like a musician knows when they're done and when a piece feels complete. ♫

Alex Lacamoire with Lin-Manuel Miranda, on *Hamilton*

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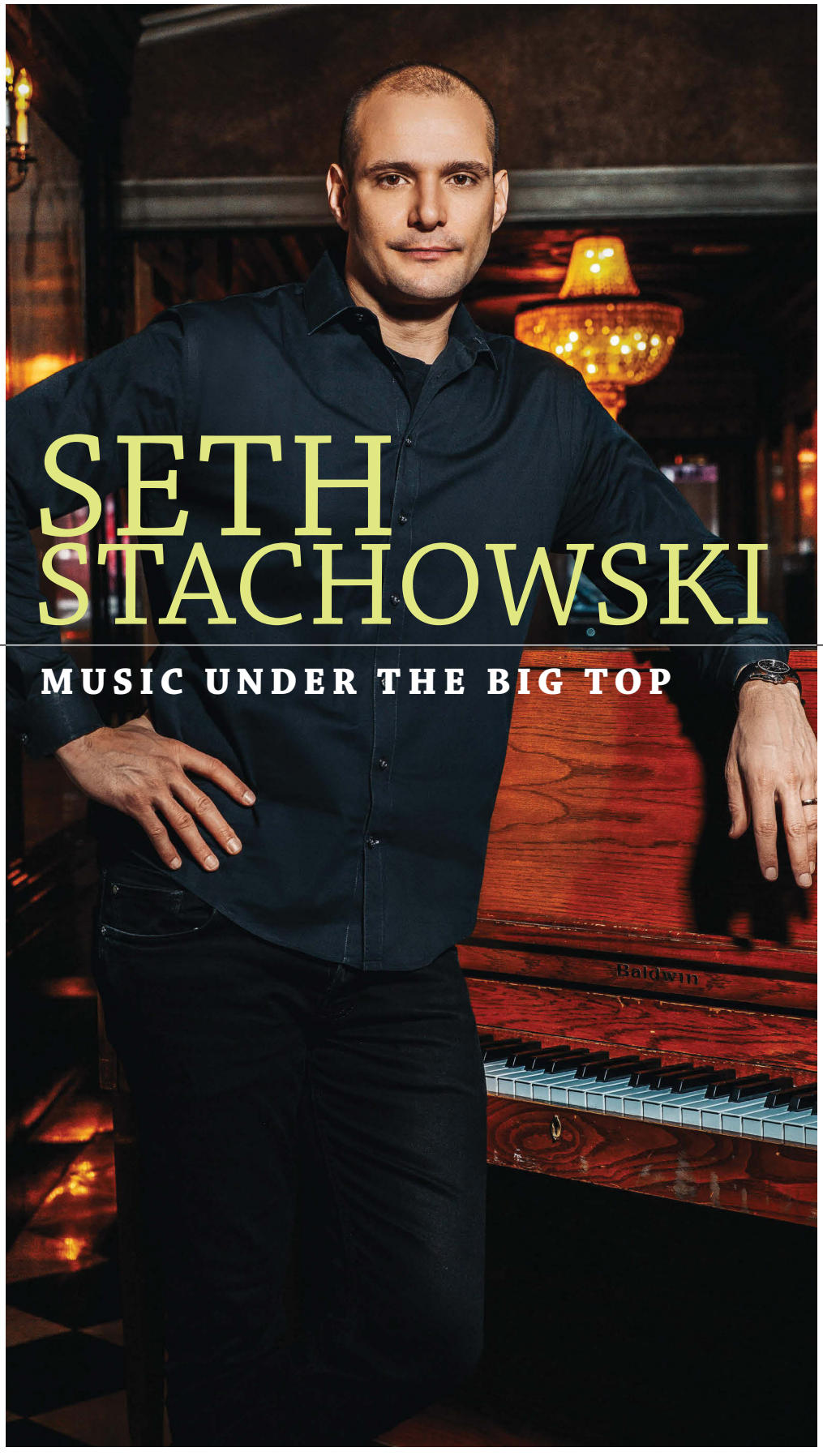

SETH STACHOWSKI

MUSIC UNDER THE BIG TOP

BY JON REGEN

"IT'S ALWAYS A CONSTANT EFFORT to improve your skill set," says multi-instrumentalist, and arranger Seth Stachowski, the current music director for Cirque du Soleil's Broadway show *Paramour*. "The goal is to do great work, no matter what you're working on."

Stachowski has made a name for himself as both a performer and composer of serious sonic merit; he's had a string of successes with the Cirque du Soleil shows *Iris, Zarkana, Kooza*, and more. He traces his musical evolution back to his home state of New York.

"I grew-up in a town called Clarence, which is a suburb of Buffalo," Stachowski says. "I started playing the piano at the age of five, and I started taking lessons at a fairly young age. At that time in my youth, I was inspired by people like Billy Joel, and then I got really into more pop and rock things like Van Halen, Def Leppard and other MTV acts. As I got older, I started getting into classic bands like Led Zeppelin and Pink Floyd, as well as progressive things like Genesis, Rush, King Crimson, and Yes."

Stachowski would get into the performance groove early, forming his first bands when he was still in junior high school. "I started playing guitar in my first band in the sixth grade,"

he says. "We were a little band with a repertoire of approximately two-and-a-half songs, and if we were playing a dance, we would probably play those songs about twenty times. Or we'd play a blues for twenty minutes! It was pretty funny."

The gear bug would bite Stachowski early on. "I started playing keyboards and guitar in progressive rock bands during high school," he says. "I got my first really cool keyboard around the age of sixteen—an Ensoniq TS-12. I remember going to a music store in Buffalo called Unistage to check out all the keyboards, and when I got the Ensoniq, I thought it was just the be all and end all. It had this great set of weighted keys that felt like a piano, and to me at the time, the sounds were a cut above what the other keyboard companies were putting out. It had a really cool sequencer too.

I loved that keyboard, and it lasted me many years until I switched to what became the main keyboard in my setup for a long time—a Korg Triton. That's the one that became the mainstay of my setup for playing and composing. It was my MIDI trigger."

Stachowski credits his continued success to his early ability to multitask. "I think one of the things that has really helped me over the years as a musician—certainly with Cirque [du Soleil]—is that I was always doing all sorts of different things," he explains. "I was playing saxophone and into the classical and band scenes too. I was playing in the wind ensemble, I was the drum major in the marching band, and I also took a real interest in conducting and musical theater. I also played piano and sax in the jazz band, and I started taking jazz piano lessons as well. I was basically in every ensemble. It was all music, all the time!"

Music remained Stachowski's primary focus during his college years as well. "I went first to the State University of New York at Fredonia," he says. "The initial idea was that I was going to go study music education, so I played classical saxophone in the wind symphony. I also started getting really heavily into jazz—so much so that I started cutting class to practice! I would sit in the practice room, 'shedding' [John] Coltrane solos on saxophone and piano.

The cool thing was that every week, the jazz combo that was part of the Jazz Workshop at SUNY Fredonia would go out and play at a club. You'd practice all week and then you'd get to go out and play club dates every week. That was a great way to make progress and play with other musicians. Eventually, I got to be the director of the Jazz Workshop. I think I was the youngest one up until that point."

Stachowski left college for a short time to focus on performing. "I realized that I wanted to be a performer, so I took a break from school to focus on playing," he explains. "Eventually I went back a few years later, getting my Bachelor of Music degree at the University of Buffalo. By that time, I had gotten bitten by the composition bug, doing film scoring and production music. All the while, I was still performing as much as I could, playing weddings, and in Latin bands which was awesome.

There's a lot to do during the shows: I'm playing, conducting, running Ableton, and more. I'm also doing arranging, orchestration, composing, and various rehearsals. I'm pretty busy!

"You learn so much playing with different people in different groups. I also became interested in electronic music and DJing—exploring as many different kinds of music and instruments as I could."

In 2006, Stachowski would join forces with Cirque du Soleil, a relationship that thrives to this day. "I remember coming to New York to do an audition for them in the spring. It was a pretty intense audition at SIR Studios. They didn't ask me to prepare anything—they just sort of ran me through the paces, and I had to play along with all sorts of songs. I had no idea what I was getting into!

It was mostly improvising, but at some point, they asked me if I did MIDI programming and I replied, "Of course!" They thought I'd be a good candidate to be a bandleader for them, and a few months later, they asked me to come to Montreal to meet the composer of one of their shows. Soon after, I got the job as the bandleader on the touring show *Kooza*. I stayed with that show for about

four and a half years, doing the entire North American tour. Following that show, I moved with my family to Los Angeles. Soon after, I became the music director for the Cirque show *Iris* in Hollywood. Danny Elfman, one of my musical heroes, did the score for the show and I got to work with him. That was super cool!"

In addition to his work with Cirque, Stachowski also delves into myriad other musical projects. "For the last ten years, I've been involved in production music," he says. "I also have a music publishing company where I work with other composers on projects as well, and I composed some classical pieces too. I always try to keep writing."

Stachowski's latest Cirque work began on the New York production of *Paramour* in January of 2016. "I'm playing keyboards, electric guitar, banjo and tenor saxophone," he explains. "My main keyboard for the show is an 88-key Korg Kronos, and all of the show's sequences and the click are coming out of Ableton Live, which I've been using with Cirque for the last ten years. So there's a lot to do during the shows: I'm playing, conducting, running Ableton, and more. I'm also doing arranging, orchestration, composing, and various rehearsals. I'm pretty busy!"

"I think the key to my success has been my curiosity," Stachowski continues. "I'm very curious about technology and different musical styles and instruments. I think it's about being willing to learn new things quickly and adapt to different situations. You have to be musically flexible." ♫

Seth Stachowsky: "River Study No. 1"

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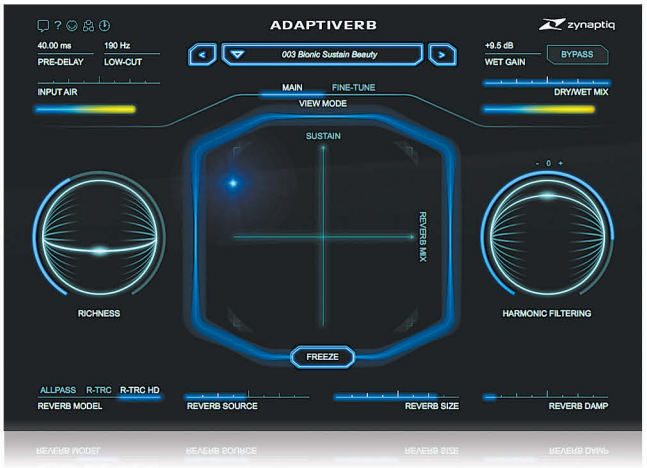

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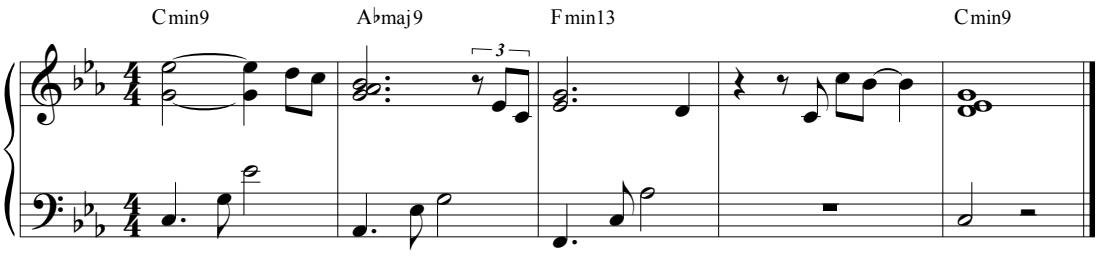
5 WAYS TO PLAY LIKE

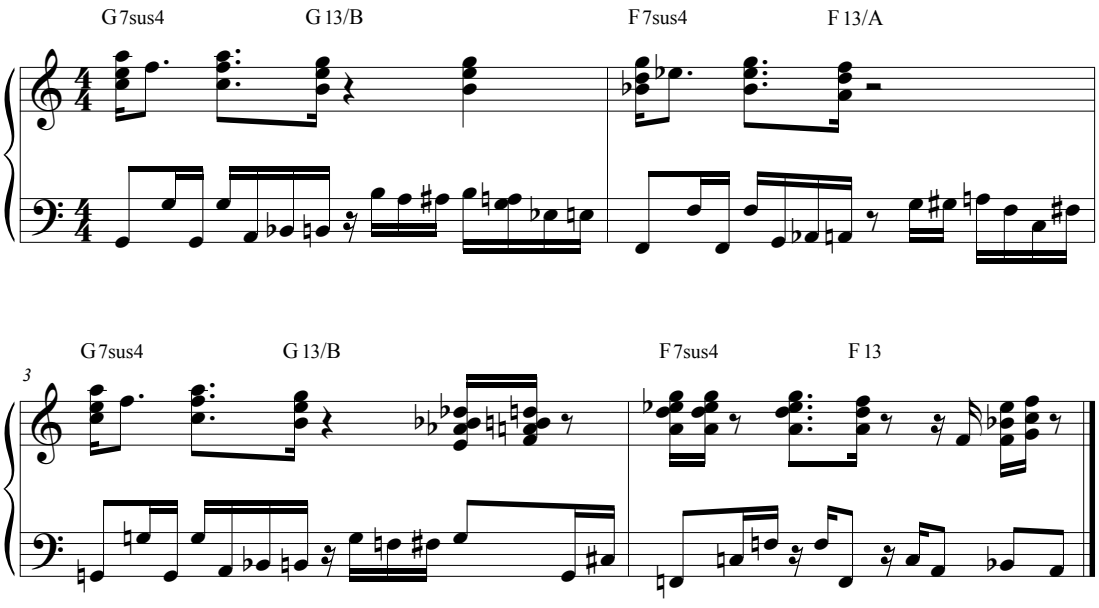
Terrace Martin

BY BRIAN CHARETTE

GRAMMY AWARD-WINNING INSTRUMENTALIST AND PRODUCER TERRACE MARTIN STARTED OUT ON SAXOPHONE, BUT of late he is known best for his keyboard work with hip-hop and rap artists such as Kendrick Lamar, Snoop Dog, and others. Martin's latest solo album *Velvet Portraits* is up for a Grammy for Best R&B Album in 2017, and he is also co-producing the upcoming album by Herbie Hancock along with keyboardist—and January cover artist—Robert Glasper. Let's take a closer look at some of the elements that make Martin's music so compelling.

Ex. 1



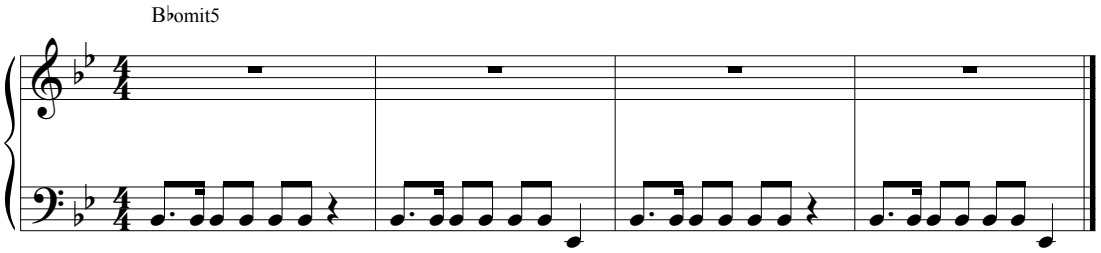
Ex. 2

1. Piano Effects

Ex. 1 is influenced by the piano part on the title track of Martin's new album. The piano has interesting effects on it (including pitch bend), so in our example, I added some delay that I've synced to quarter notes so we get a little wave of sound in time after the chord plays. Our left-hand part has a gentle arpeggio of chord tones, usually containing a fifth and a seventh or third. The right-hand chords have some crunchy seconds, like the minimal *A♭maj9* shape in bar 2. This example is in the *C* natural minor scale (*C, D, E♭, F, G, A♭, B♭, C*).

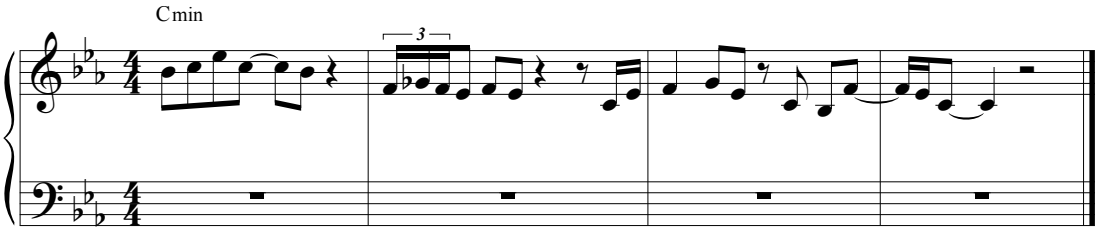
2. Funky Keys

Ex. 2 is inspired by Martin's funky keyboard riffs in his song "Valdez off Crenshaw." Here's we're using a wah-wah clav sound with a right-hand part that features a repetitive rhythmic figure with a grace note at the beginning of the phrase. The main harmonic motion here is the movement of the seventh of the sus4 chord to the third of the following 13th chord in the lowest voice of the right-hand part. (This is the movement of *C* to *B* in Bar 1). At the end of Bar 3, we have a little chromatic side-stepping borrowed from Tower of Power organist Chester Thompson. The left hand has a driving 16th-note pattern with lots of syncopation and a chromatic line that arrives on a root or third at just the right time. All of the notes, except for the chromatic embellishments in bars 1 and 3 are from the *G* Mixolydian mode (*G, A, B, C, D, E, F, G*) and in Bars 2 and 4 from the *F* Mixolydian mode (*F, G, A, B♭, C, D, E♭, F*).

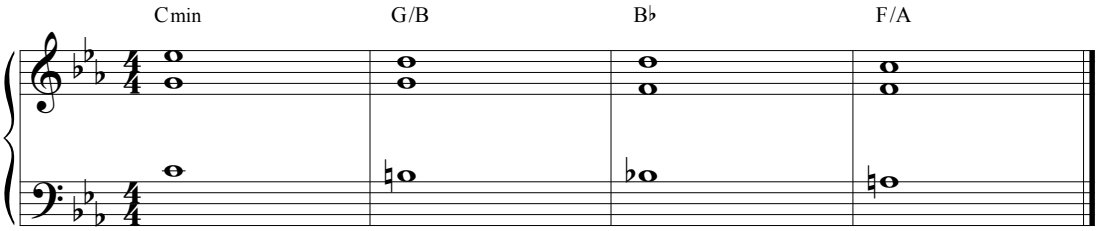
Ex. 3



Ex. 4



Ex. 5



3. All About That Bass

Martin gets funky on bass parts too, like the one on his tune "Turkey Taco." Let's create a bass part in a similar style in **Ex. 3**. Most of the interest in the sound here comes from the cutoff frequency opening and closing with the filter resonance set pretty high. When the filter gets over a certain threshold, a sweeping sound is created. In this exercise, I'm manipulating both the cutoff and res knobs. I also like to use ring modulation on Osc 2 of an analog synth to get wild overtones and distortion when trying to get a bass line with some sonic movement.

4. Mono Synths

Martin adds soulful synth fills on many of his tunes, like the one featured on his song "Oakland." Let's approximate his synth stylings in **Ex. 4**. Here we have a mono synth sound with the filter almost closed. You can also add a little portamento or LFO if you want to put a little expression in the line. All of the notes in this exercise come from the *C Blues Scale* (*C, E♭, F, F♯, G, B♭, C*). The highlight of this phrase is the gospel-influenced turn at the beginning of bar 2 that emphasizes the blue note, *F♯*. Remember, with synth fills you just want little parts to highlight the melody, so keep it chill!

5. Drop 2 Strings

In **Ex. 5**, I am using the time-tested technique of Drop 2 to give some good spacing to my string chords, approximating the style of those arranged by acclaimed saxophonist Kamasi Washington on Martin's version of the Kendrick Lamar track "Mortal Man." In Drop 2, you take the second note from the top of a chord shape and move it to the bottom voice. Here we just have triads, so we simply move the middle note to the bottom. This is a great trick to get quick ensemble parts from piano chords for horns and strings. (When you have dense chords with quite a few notes, this is especially true.) You can also use the technique of Drop 3, which takes the third note from the top and puts it on the bottom. ♫

NILS WINTHER

Bio

"When writing your own tunes, try to experiment with different progressions of diatonic chords and keep all of the notes you play in that mode. As the voicings progress, hit a couple notes in the mode but outside the chord; fourths and tensions will naturally be created and make some interesting colors," says keyboardist and composer **Brian Charette**, who won *Downbeat* magazine's "Rising Star Organ" award and recently released the album *Once & Future*. He also has a new book out entitled *101 Hammond B-3 Tips: Stuff All the Pros Know and Use*. Find out more at briancharette.com.

Terrace Martin plays "Push."

keyboardmag.com/march2017

Playing in *Clave*

THE PIANIST'S GUIDE TO AUTHENTIC CUBAN GROOVES

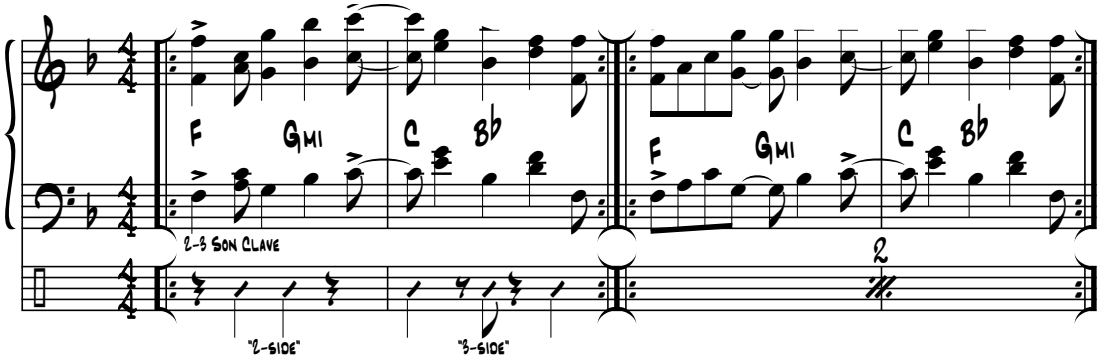
BY REBECA MAULEÓN

WHILE NOT QUITE "MAINSTREAM" FOR THE AVERAGE POP KEYBOARD PLAYER, THE TECHNIQUE ASSOCIATED WITH Latin piano interpretation—*montuno*-playing—has certainly impacted the jazz world, with hard bop pianists such as McCoy Tyner, Horace Silver, and many others having explored Latinized jazz grooves in the 1960s. However, for a more authentic way of interpreting the Cuban-derived Salsa or Latin jazz rhythms of today, all pianists need to come to terms with the fact that you can't fake it if you want to get gigs with the "real cats."

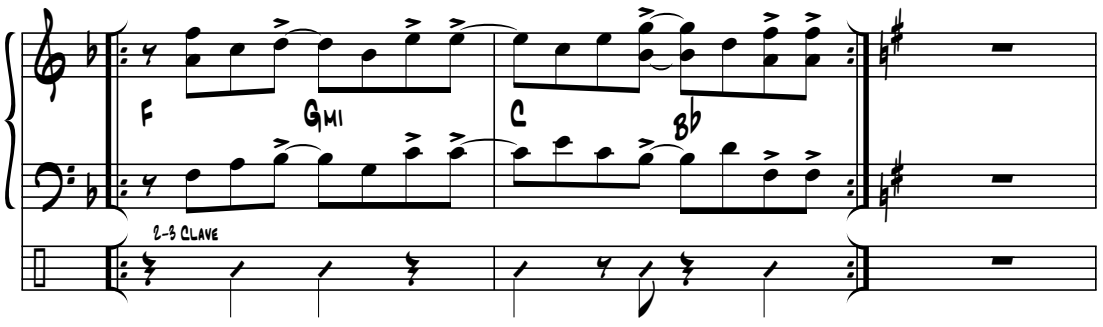
Without oversimplifying the need to do some serious shedding on Cuban music history, it is safe to say that authentic *montuno* playing boils down to one primary ingredient: understanding the *clave*. Here are a few examples of *montuno* patterns, in a variety of styles and *clave* directions, illustrating how the piano rhythm is shaped by this foundational principle in Cuban music.

Ex. 1a. Primordial Montuno (2-3 *Clave*)

Ex. 1b. Primordial Montuno with Arpeggio



Ex. 2. One-Bar Pattern



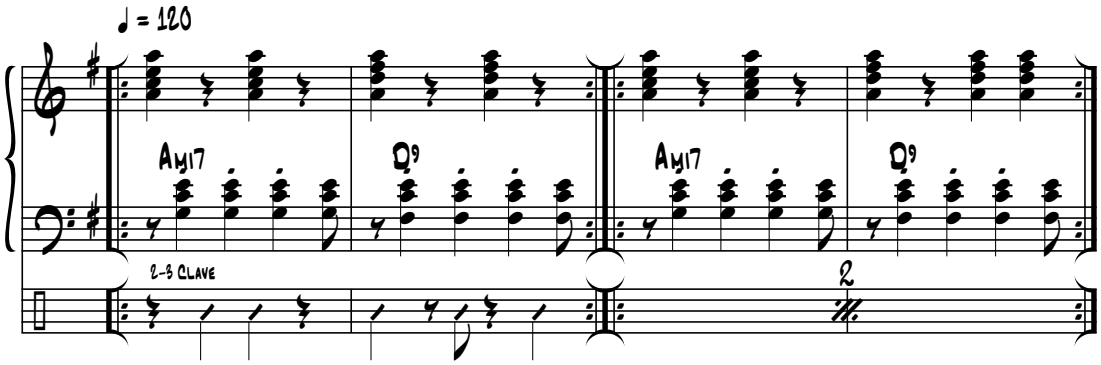
1. The Primordial Pattern: The Standard Montuno with 2-3 *Clave*

Though there are literally hundreds of different patterns you can play in a *montuno* context, **Ex. 1a** has become the standard and is derived from the Cuban *tres* guitar. The style of music associated with this pattern, the *son*, is the most influential of all Cuban popular genres and is also used for faster tempo styles including *son-montuno* and *guaracha*. The relationship of this "primordial" montuno to the clave is fairly straightforward: The downbeat of the 2-bar phrase falls on the two-side of the clave, and the measure of syncopated notes aligns with the 3-side. In **Ex. 1b**, adding an arpeggio on the first chord of the 2-side measure creates variation. Note the accents in the first measure on beats 1 and the *and* of 4; these come in handy for comping patterns, as we explored last month.

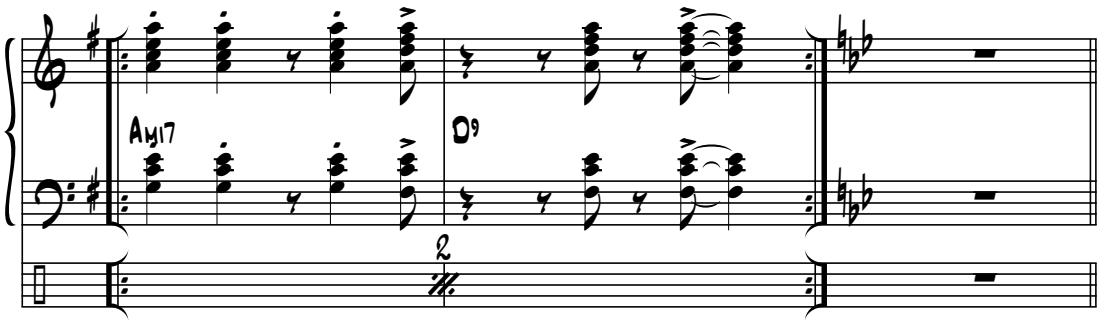
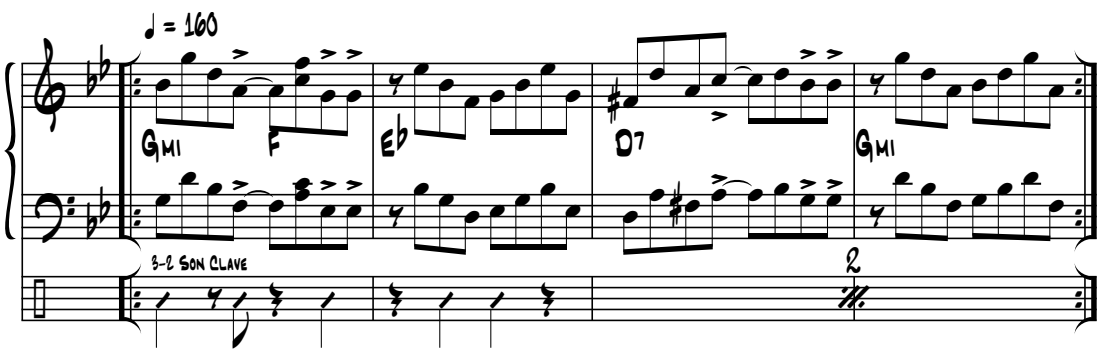
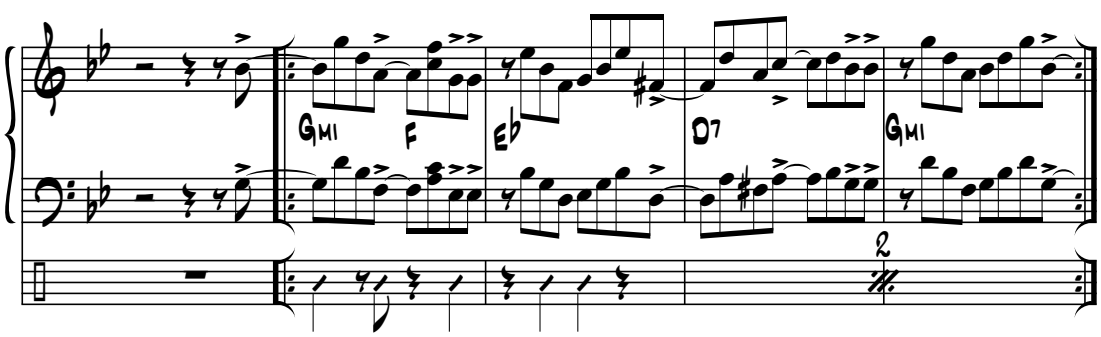
2. One-Measure Patterns are *Clave*-Neutral

Given the binary structure of most Caribbean music genres, what makes

Ex. 3a. Cha-cha-chá



Ex. 3b. Cha-cha-chá with 4th beat added to second measure

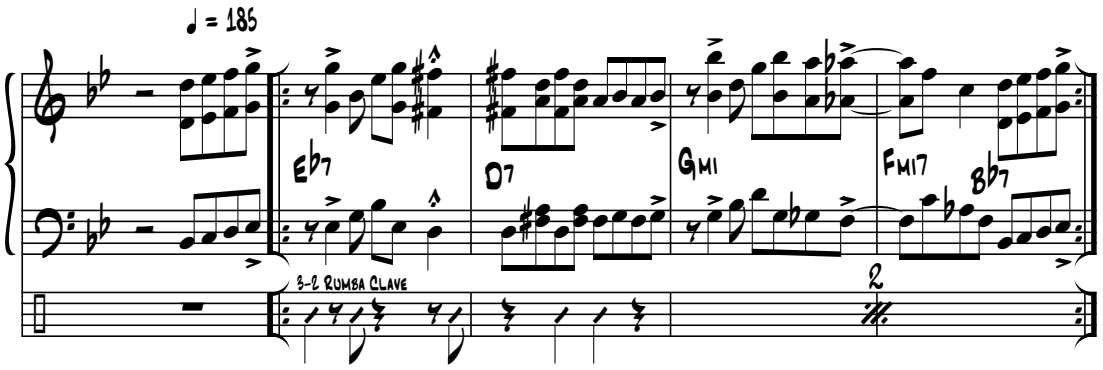
Ex. 3c. Cha-cha-chá variation: Tito Puente's signature riff

Ex. 4a. Arpeggios (3-2 *Clave*)

Ex. 4b. Anticipated Arpeggios (3-2 *Clave*)

the *clave* so special is precisely its antecedent-consequent relationship of tension and release. If you take away the *montuno*'s binary structure and avoid accenting the pulse on the 1st and 3rd beats, the result is more akin to one of Cuban music's original styles, the *changüí* (the oldest form of *son*). The majority of ostinato patterns played by the *tres* guitar feature this type of ultra-syncopated phrasing, which are useful when you're trying to create more rhythmic excitement or when you're unsure of the *clave* direction.

3. Cha-cha-chá: Always in 2-3

Before venturing into more complicated patterns, it's a good idea to get a solid handle on some of the other commonly played styles in Salsa and Latin jazz. The Cuban cha-cha-chá is one that cross-pollinates easily into jazz as well as Latin rock and is always played in a 2-3 *clave* direction. Ironically, the standard pattern in the style is basically a one-measure figure, with the right hand playing the pulse and the left hand on the upbeats (**Ex. 3a**). It can be made into a binary figure by adding a simple consequent phrase, with the right hand adding another accent on the 4th beat of the second measure (**Ex. 3b**). In the late '30s and early '40s, a new pattern emerged that became the signature riff of Tito Puente's infamous tune, "Oye Como Va" (**Ex. 3c**). Note that while all of these examples contain a basic *ii-V* chord motion, the same rhythmic principles can be applied to any progression.

4. Arpeggios in 3-2

Pianists in traditional as well as contemporary Salsa have continued to evolve *montuno*-playing techniques, with the frequent use of arpeggios being the most noticeable variation. Add some harmonization to a simple triadic phrase (resulting in 10ths), and create a rhythmical phrase that essentially outlines the *clave* rhythm, and you get a distinct *montuno* in 3-2 *clave* (**Ex. 4a**). The same approach is even more dramatic when the pattern anticipates by starting on the *and* of 4 (**Ex. 4b**),

Ex. 5. Timba Abierta (3-2 Clave)

Bio

Rebeca Mauleón is the author of several books and articles on the subject of Afro-Cuban music, including the *Salsa Guidebook* and *101 Montunos* (both available from Sher Music). She is Director of Education for the San Francisco Jazz organization (SFJAZZ) and has recorded and performed with Tito Puente, Carlos Santana, and many others. When not teaching, producing or writing, Mauleón fronts her own band. More examples of her work can be found on her blog and at her website at rebecamauleon.com.

creating an opportunity for the entire rhythm section to kick into the phrase with a syncopated entrance.

5. Timba Abierta: Groove in 3-2 Rumba *Clave*

While commercial Salsa and earlier Latin jazz styles tend to emphasize the *son clave* as the principle guiding rhythm, modern Cuban styles such as *timba* are more likely to use *rumba clave* as a foundation. This results in a generally faster tempo, increased variation and staccato phrasing, a tendency to accent unusual beats (such as the *and* of beat 1), use of beat displacement, contrary motion, and a funkier feel all around, often superimposed on top of a more fluid bass line. **Example 5** demonstrates this more liberal approach to contemporary *montuno* playing.

While repetitive grooves can sometimes seem monotonous, a little variation adds the necessary spice to create truly authentic *montunos*. ♫

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TIPS & TECHNIQUES

From the Pros

1 Be Smart with Your Time: Listen in Solo as Little as Possible

Try not to spend too much time working with soloed instruments. You should be listening to instruments within the context of the entire mix or while listening to two or more instruments that are competing for the same frequency range. For instance, trying to EQ and compress a kick drum without the context of the bass or the rest of the track will often leave you disappointed and frustrated.

2 Use Harmonic Distortion on Low End for Laptops and Earbuds

More often than not, people listen to music on their laptop, phone, or through terrible earbuds without proper bass representation. Low-end frequencies don't tend to cut through these platforms, so you must mix accordingly for translation. Take your low-end tack—bass, 808, etc.—send it to an auxiliary channel, notch out everything but the bass with EQ, and add harmonic distortion to emphasize the sound's overtones; when you edge this aux track back into the mix, it'll translate better to laptops and such.

3 Know When to Automate

Volume automation is your friend—it can lend power to a chorus and bring out an otherwise inaudible word or phrase. But don't reach for automation too quickly, because mixing is a balancing act: as your mix changes, you'll have to keep going back to tweak your automation, which can become a hassle. Automation can also take up CPU power and slow down your DAW. If you save it for the end, it'll speed up your workflow.

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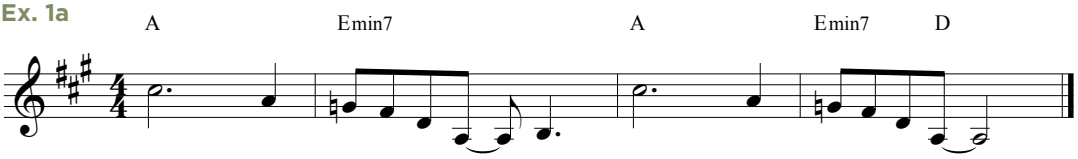
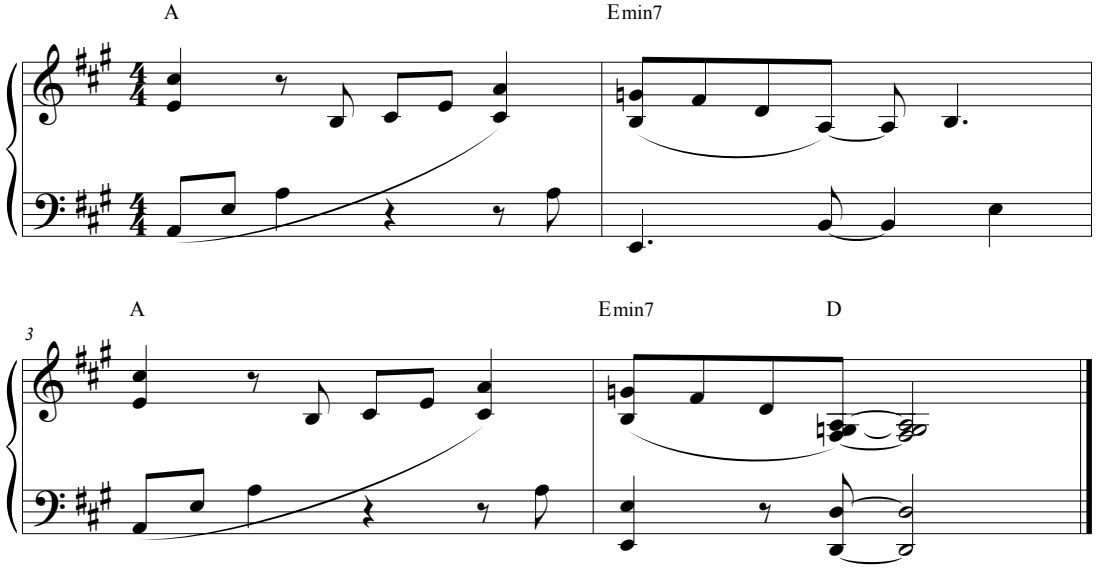
A Pit Orchestra Primer

MATT BECK

ARE YOU INTERESTED IN BREAKING INTO BROADWAY WORK AS A KEYBOARDIST? Are you wondering what the gig entails and what skills need to be mastered? Well, there's no shortcut for experience and cutting your teeth doing smaller Off-Broadway shows and cabaret gigs, but there *are* a few things you can work on to be ready for when opportunity knocks. Here's a basic primer of some techniques that should be learned before making your Broadway debut.

Ex. 1a

Ex. 1b



Practice Tip "When practicing sight-reading, grab whatever notes you can and if you miss any, *keep going*! Don't lose your place or break time to grab a note you didn't get. Keep moving forward. That's probably the best advice I can give," says multi-instrumentalist Matt Beck, who plays guitar and keyboards with artists like Rob Thomas and Matchbox Twenty. Beck recently joined the pit orchestra of the new Broadway musical *Amelie*. Find out more at mattbeckmusic.com.

1. On-the-Spot Arranging

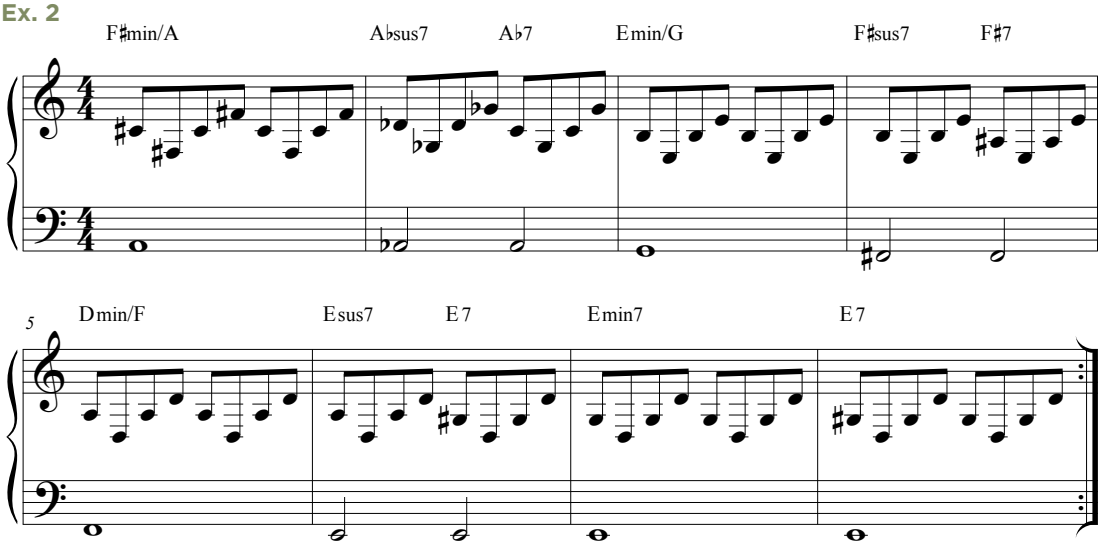
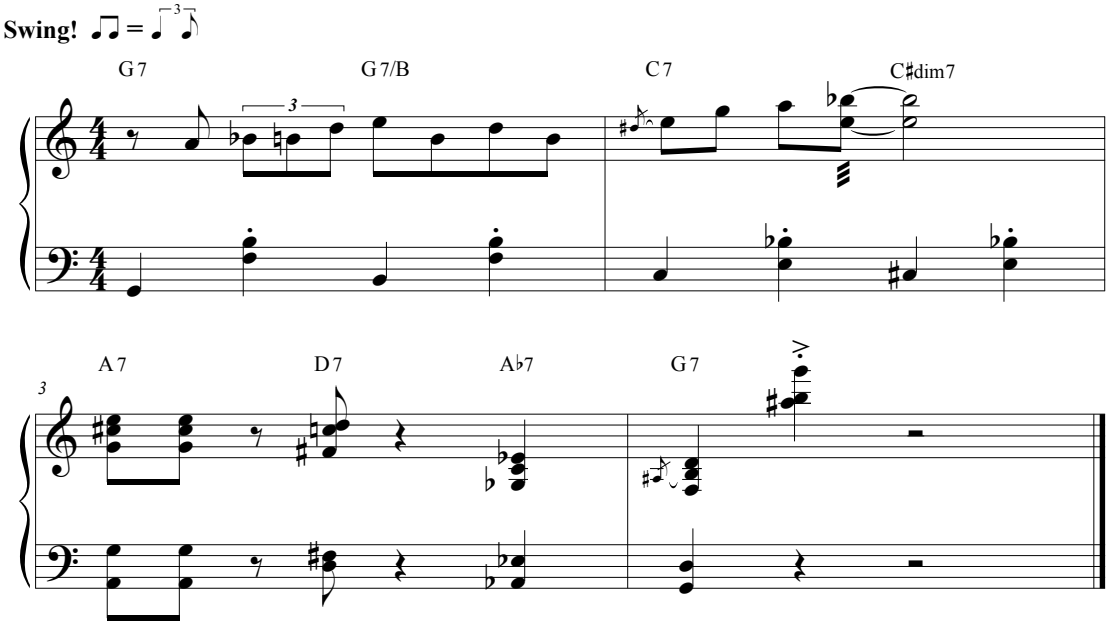
Though the music you play in a Broadway show is almost always fully notated, being able to spontaneously create an arrangement is a necessary skill. Sometimes when you are in the early stages of a musical (such as participating in a workshop of it), there aren't arrangements yet and you could be called to come up with an intro to a song, a basic accompaniment, or some underscoring for a scene. Having this ability will go a long way to ensure that you are kept as part of the show moving forward. **Ex. 1a** is an example of a basic melody and chord progression that you might see on a lead sheet. **Ex. 1b** is a way that I might flesh-out this idea so that it makes musical sense to what may be happening in a show, especially if the piano part is meant to be very exposed. Notice the use of the rolling eighth-note arpeggios to give a sense of movement along with the added ninths and fourths to the chordal harmony to create lushness.

2. Finger Stamina

Because Broadway music is meant to move a story along and to help the actors portray the scene they are in, sometimes you may be expected to play long sections of repeated notes to capture a particular feeling the composer and director are trying to convey. Because of this, there can be stretches of music that command quite a bit of finger stamina to get through. Having the chops to not fatigue in these moments is the key to a bright future in this line of work. **Ex. 2** is a reflection of a passage one might be expected to play, with a relentless stream of 16th-notes that needs to be articulated strongly throughout.

3. Classic Styles

While more and more musicals today

Ex. 2

Ex. 3

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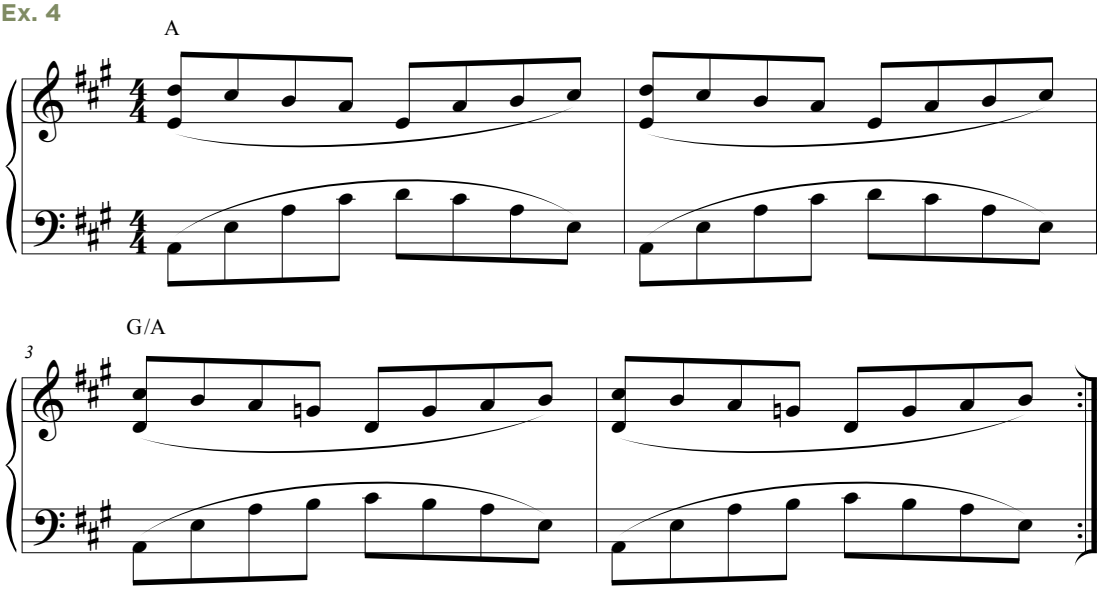

rely on contemporary styles of music such as rock, funk and hip-hop, there are still many Broadway shows that have a more traditional score and lean heavily on older styles like swing, two-beat and waltz. Having a grasp of these styles is imperative to doing well in the business. Even shows that have a modern flavor tend to have sections that dip into the styles of the past. **Ex. 3** is one such style you may be called upon to play. It's a stride pattern and the more convincingly and authentic you can play parts like this, the more convincing it is for the listener who is watching what's happening on stage.

4. Sight-Reading

Sight reading is a necessary skill if you want to break into the Broadway world. Scores change throughout the process of putting a musical together, and there will be no time to wait while you figure out the notes on the page. You need to make musical sense of things right away, even if it means that you don't grab every note on the first time through. You'll never have to sight-read in a performance situation, but when you are in the early stages, you have to be able to move quickly on the music as it is presented to you.

So what can be done to ensure that you have the necessary reading skills to make it on Broadway? Practice! There's no other way. Start by reading simple music for a little bit of time every day, and gradually select harder and harder pieces until you're reading on a very strong level. Maybe start out with some easy Bach Prelude and Fugues. Start slow; very slow if you have to. Start one hand at a time if need be. Whatever it takes to get you started sight-reading on a regular basis will do wonders for your music reading, overall, when it comes time to do it for real.

It can also be a fun process because, as your sight reading improves, you'll be making music spontaneously, and it's fun to hear what comes out when you don't know exactly how a piece sounds ahead of time.

Ex. 4 is something I wrote specifically for you to jump into and start sight reading. Using a metronome is very helpful in this situation, as it will keep you honest with your time. ♫

AURELIO MORAES / WIKIPEDIA

THE ART OF SYNTH SOLOING

The Caped Wonder—Rick Wakeman

BY JERRY KOVARSKY

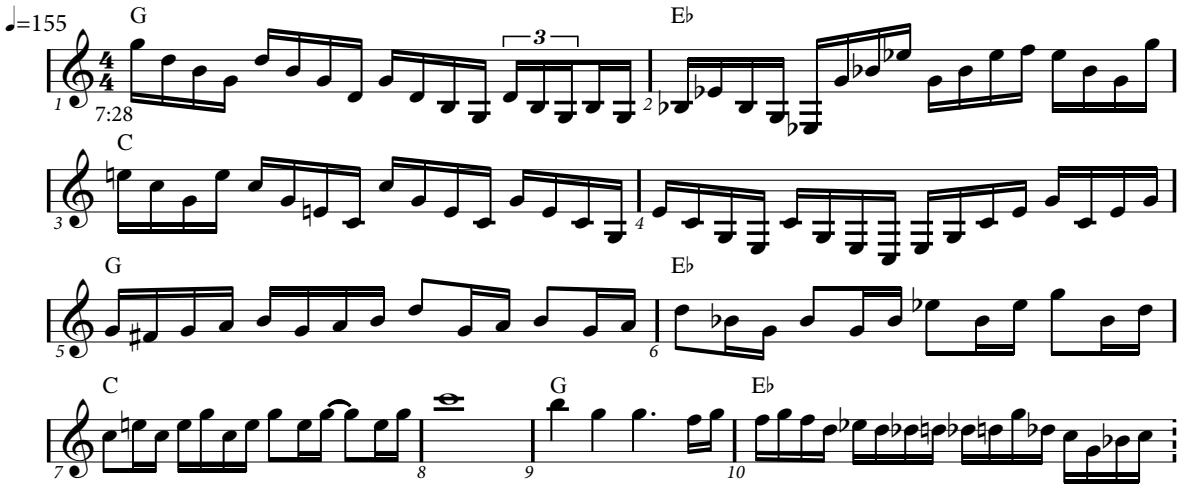
IS THERE A BIGGER STAR IN ALL OF PROG-ROCK THAN RICK WAKEMAN? IT IS ESTIMATED THAT HE HAS SOLD MORE than 50 million albums across his solo career, never mind about that band he used to play in. Fleet fingered, flamboyant, funny, and given to excess (he virtually invented the "who has more keyboards" arms race), Mr. Wakeman has created a body of work that has influenced so many of us keyboardists.

As with other artists I have covered lately, many of the prominent synth parts in Wakeman's discography are the result of composition and arrangment. But by including some released live concerts, I had no problem finding excellent solos for us to dissect.

A Yes Classic

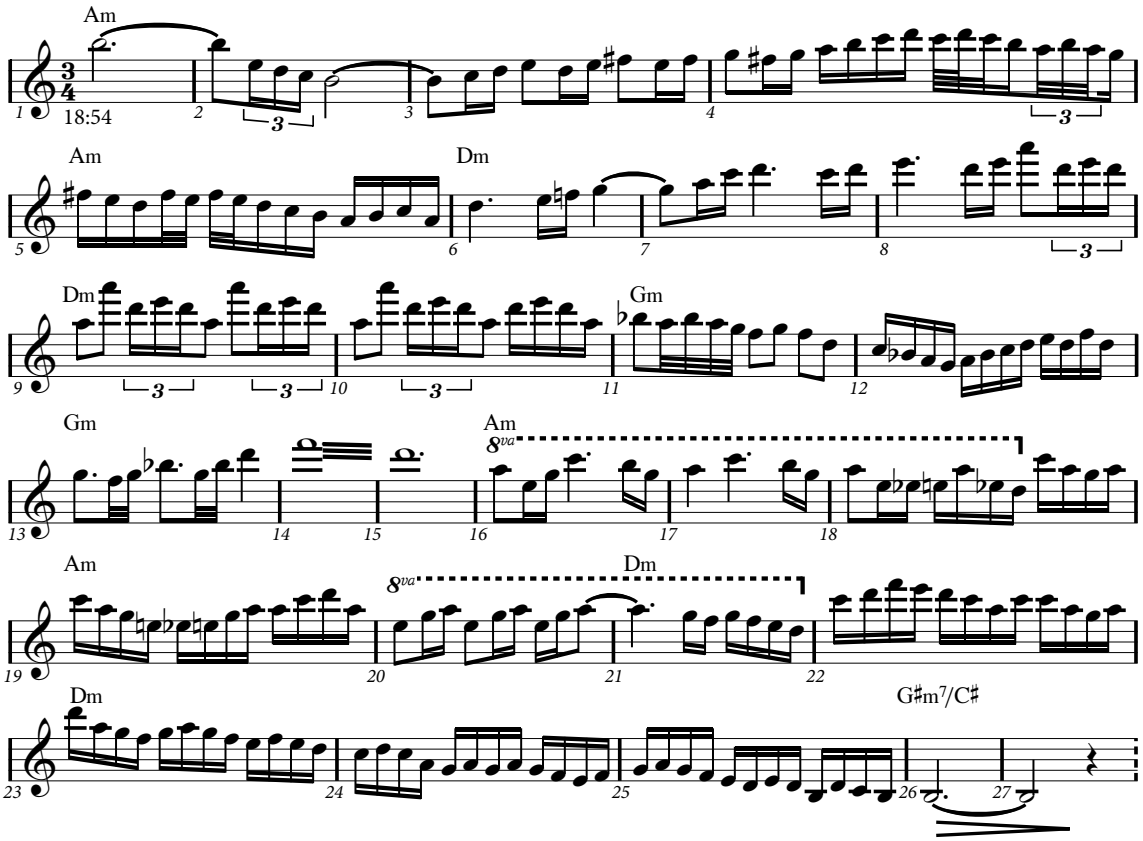
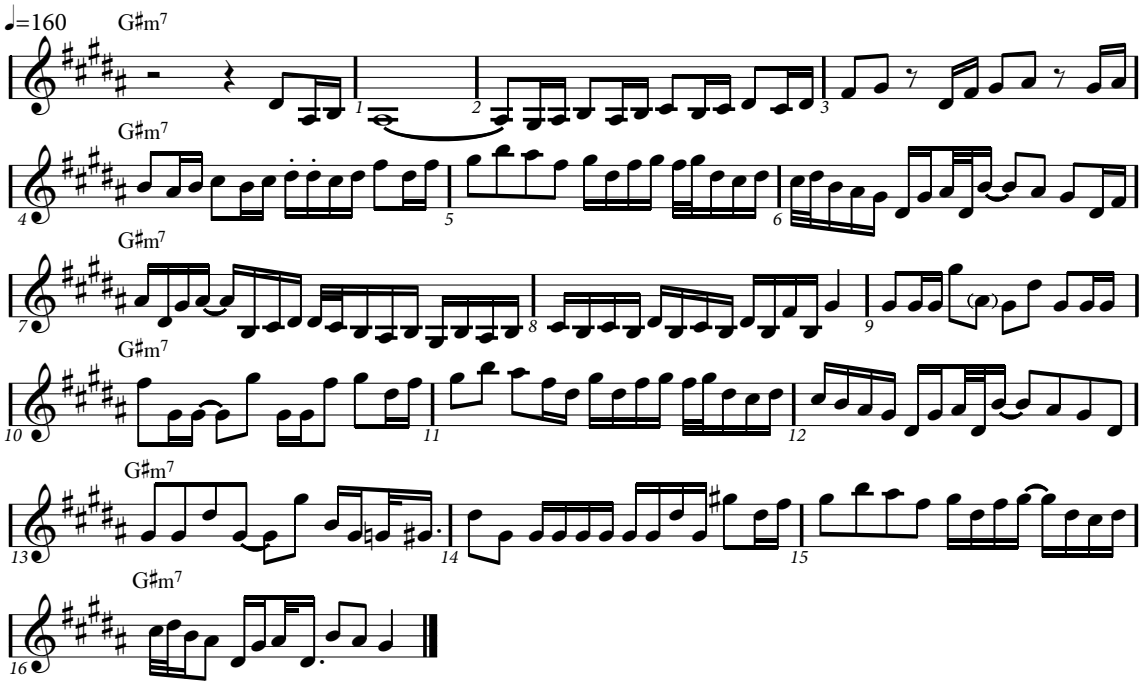
My first example comes from the live album *Yessongs* released in 1973, from a concert in December 1972. (Note: the recently released 14-CD boxed set *Progeny* elaborates on this 1972 tour, offering seven shows in their entirety.)

"Starship Trooper" was part of the *The Yes Album*, released in 1971 and featuring Tony Kaye on organ throughout. A three-part suite, the last section of "Starship Trooper" was "Würm," a three-chord dirge that built in intensity, capping off in a left speaker/right speaker guitar duel by Steve Howe. After Wakeman joined the group, they often performed this tune in concert.

Rick takes a short Minimoog solo before the guitar feature, and he filled the space with his typical flourish of fleet-fingered gymnastics. **Example 1** shows the opening of that solo. And while the arpeggiated notes are not that hard to analyze against the harmony, I dare you to equal his articulate chops given the tempo, and remembering how difficult it was to play so fast and clean on a Minimoog. I double-dare ya!

Ex. 1. Rick's solo from "Starship Trooper," from the live *Yessongs* release. This is a great example of how he used chordal arpeggiations and sheer speed to dazzle the audience.

None Better

After the live album, Yes returned to the studio to record *Tales From Topographic Oceans* in late 1973. It was controversial for its supposed excess; a double-album with extended tunes and ever more mystical themes and lyrics. But within this recording are many wonderful musical moments. For me, it includes my favorite Wakeman synth solo ever committed to tape, in the song "The Revealing Science of God."

The whole solo is presented in **Ex. 2**. The note choices come from the Dorian mode for each chord. Rick shows great taste in his lines, opening the solo on the 9th of the *A* minor chord, moving through some scale-based runs and then emphasizing the 6th of the chord in his phrase in bar 5. Starting in bar 8 he plays a colorful re-

Ex. 2. My favorite Wakeman solo comes in "The Revealing Science of God," from *Tales Of Topographic Oceans*. Colorful note choices abound within the scale-based runs, and he never comes up for air.

Ex. 3. Returning to tour with Yes in 2003, Rick tears it up on a one-chord jam in "South Side of the Sky," as featured on the *Live at Montreux 2003* release. Get the DVD/Blu-ray to watch his performance.

peated figure on the *D* minor, which looks like an *A sus* chord, so it avoids the more basic root and minor third part of the tonality in favor of more interesting color. For the *G* minor chord he plays some scale runs that again center on the 9th and 11th before finishing on more basic chord tones. Then for the *A* minor he starts using the blues scale (bars 18-20) for a nice change-up. For the final *D* minor chord he plays a charging downward phrase that again starts to emphasize more colorful, non-triadic note choices. Look at the downbeat of each note grouping in bars 23-25; he uses the 11th, 9th, and 7th of the chord, with the final group starting on the 6th. Tasty.

Revisiting a Classic

Rick left and returned to Yes a few times over the years, and he has stated that one of his favorite times coming back to play with them was between 2002 and 2005. During those touring years they played a headlining show at the 2003 Montreux Jazz Festival, which was released as a CD and DVD in 2007. I chose Rick's solo on "South Side of the Sky," originally from the *Fragile* (1972) album for **Example 3**.

This solo is a blistering synth/guitar duel on a single chord, and Rick really tears it up. Again, he starts on the 9th of the chord, and uses the Dorian mode throughout, although he never touches on the 6th note of the scale. This example shows off a signature aspect of Rick's playing, which is the fast little turns, or ornaments, he often uses in his lines, both on synth and piano. (Look at the figures on beat four in bar 5, beat one in bar 6, beat three in bar 7, beat four in bar 11, and beat one in bar 16.) This solo section is the first from the series of trades with the guitar; the full version is posted online. Enjoy! ♫

SOUNDCLOUD

The full solos are available online for further study.

keyboardmag.com/march2017

Harnessing Thor's Thunder, Pt. 2

PERFORMANCE CONTROL FOR REASON'S THOR

BY FRANCIS PRÈVE

LAST MONTH, WE EXPLORED METHODS FOR USING THE MOD WHEEL TO CREATE DRAMATIC SHIFTS IN TIMBRE. THIS time, we will use velocity to control different parameters than filter cutoff and amp modulation. The goal, here, is to develop expressive patches that can be tailored to your playing style and allow you to add a greater amount of nuance to your playing.

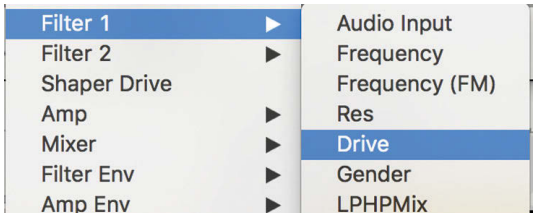
To demonstrate these techniques, I will use one of the world's most ubiquitous software instruments—Propellerhead Thor. Thanks to its availability within Reason and as an affordable, standalone iPad app, Thor is an ideal softsynth for trying out performance options.

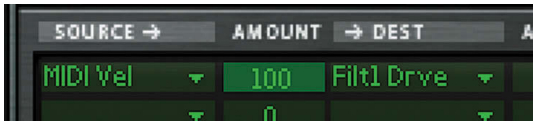
Drive, She Said

Controlling the overall volume of a patch can be accomplished by applying velocity to the amplifier in Thor's gain module. But for those looking for a more aggressive sound, try routing velocity to the drive parameter on one of its four filter options. Here's how to do it.

Step 1. In each filter, there is a drive slider that controls the input gain. High values add a bit of overdrive, which can sound fantastic on percussive sounds. Start by experimenting with the drive setting to get a feel for its effect, then set it to the lowest value you want when playing softly.

Step 2. In the modulation matrix, select Velocity as your modulation source. You will find it located in the MIDI Key options of the matrix Source menu.





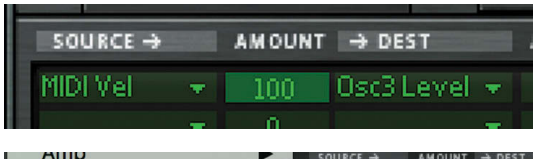
Step 3. Next, select the Drive option (on the appropriate filter) from the matrix's Destination menu. Set its value to maximum (100) and test it on a few different kinds of riffs. From there, lower the value until you've got a good match for your playing style.

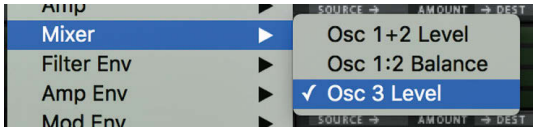
Dynamic Shimmer

A more subtle effect is created by using velocity to add sparkle and shimmer to emphasized notes. This can be accomplished using oscillator 3, as it has its own volume control in Thor's oscillator mixer, making it easy to apply in the matrix. For this technique, start with a basic one- or two-oscillator patch, either with a touch of detuning or with the second oscillator an octave lower than the first.

Step 1. Once you have your basic patch, add oscillator 3 to the mix, routing it into Filter 2 (with no filter selected, so the signal is unprocessed) and making sure Filter 2 is routed directly to the Amp section. Then tune Osc 3 to a very high octave, like 7 or 8.

Step 2. Set the Mixer level for Osc 3 to zero to make it silent.





Step 3. In the mod matrix, select velocity as the source, then route it to Osc 3's Mixer level. Set the amount to maximum (100) to hear it in action, then tailor the amount to your playing style in the context of your patch. ♫

SOUNDCLOUD Audio examples.

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CASIO

CGP-700

COMPACT GRAND PIANO

550 TONES

200 RHYTHMS

COLOR TOUCH LCD

DAMPER RESONANCE

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LINE OUT

MIXER

96/REGISTRATION

AUDIO IN

MIDI RECORDER

AUDIO RECORDER

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NAMM Booth #5900

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Keyboard K KEYBUY AWARD

music PRODUCT EXCELLENCE AWARD 2015

2015 MMR DEALERS' CHOICE AWARDS

Snap Judgment

PROS Superb acoustic pianos and super fun-to-play EPs. Superior fully weighted action. Intuitive control surface. Bluetooth audio/MIDI-enabled. Audio recording.

CONS No pitch-bend lever or mod wheel. No XLR mic input. Weighty.

Bottom Line

Top-quality, prosumer digital piano.

$1,799 street
roland.com

ROLAND FP-90

BY RICHARD LEITER

FOR MY OUT-OF-TOWN CORPORATE GIGS, I'VE BEEN RENTING ROLAND RD-800 Stage Pianos. Not only does every rental company have one, the RD-800 sounds terrific even in mono, its controls are obvious and well-lit, and you could probably drop it off the stage and it would still work. It's an industry standard.

But I imagine the visionaries at Roland have been saying to themselves, "What if we took the coolest RD-800 features and built them into a instrument with a superior internal stereo sound system, added Bluetooth functionality, and priced it a few hundred dollars less? Would consumers like this?"

After spending a delightful Christmas gigging season with the FP-90, I'd say "You betcha!" This is definitely a performance keyboard that will soon light up the eyes of music directors, teachers, singer-songwriters, performers, and artists-in-training because it's an all-in-one product that gets the job done.

Plus, Roland threw in a couple of nice surprises.

The Overview

The FP-90 is sleek and matte-black with sophisticated, slightly recessed buttons that beg to be touched (and some of which light up when you do). They're center-clustered around an ample LED screen that comfortably supports all the information you need—Split, Dual, Transpose, and other data—at a moment's notice on a dark stage.

The keyboard's eight recessed faders are smooth-throw for reliable incremental adjustment, and the three EQ faders are center-dented for a quick return to your flat-point. The other 25 buttons cover the controls you would expect—Split/Dual, Transpose, Category Selection, Data Entry, Recorder Controls—and a couple you wouldn't, such as internal song volume and the digital effects for the external microphone input. (More about that in a moment.)

Surprisingly, the unit powers up in less than two seconds, which is much faster than any other keyboard I've reviewed; it really raises the bar for this category of instrument. Moreover, the FP-90 action is effortless, and for this product Roland has added the PHA-50 Wood and Plastic Hybrid Structure with Escapement and Ebony/Ivory Feel, which provides a subtle yet athletic touch that brings out the best in both their acoustic and electric pianos. It also seems as if they have put in long nights on velocity mapping to make the playing experience so consistent across the sound gallery.

The Bluetooth connectivity handles MIDI *and* audio, so you can expand the instrument's capabilities to include app-based features such as rhythm patterns and auto-accompaniment. Or pair it with your smartphone to turn the FP-90 into the world's handsomest boombox.

Ins and Outs

The FP-90 provides a full complement of connectors: MIDI I/O, USB B (for computers) and USB A (for a memory stick), TRS ¼" stereo outputs, a miniature stereo input for your mobile device, and two

Fig. 1: The FP-90's onboard stereo speaker system offers 30W per side—perfect for rehearsals and gigs in smaller venues.

headphone jacks—1/4" and 3.5mm—on the front where you can easily get to them.

There are three pedal jacks (Soft, Sostenuto, Damper) and you would be wise to invest in Roland's KPD-90 pedal board, because the two left pedals control some important functions. For starters, you can use them to control page-turning if you pair the FP-90 with a Bluetooth-linked app that has this functionality. You can also assign one of these pedals to step through Registrations, the multisound presets that let you seamlessly prep a set's worth of material. But that's just the beginning.

The Center pedal can be assigned to control pitch bend (there is no joystick or mod wheel on the FR-90), vibrato, and the rotary effect on the organ sounds, among other things. You can even pop an expression pedal into the center jack for global volume control.

One of the welcome surprises on the FP-90 is the 1/4" microphone input and gain knob, so you can sing through the FP-90's amp and speakers. What's more, there is a dedicated Mic fader for mixing your vocal level, and DSP effects to dial in: a Compressor; a Doubling effect, that has too much pitch variation for everyday use; and Echo, which is actually a good, short reverb. These last two can also be switched on and off using the Center pedal.

Sounds Like...

While most digital pianos employ heavyweight sampling to re-create the acoustic piano sound, Roland took a different approach some years back with its flagship SuperNatural piano technology. Rather than recording thousands of individual variations on played notes, releases and other noises the instrument makes, Roland uses physical modeling to create the sound. The result is an uncommonly smooth and authentic piano tone with some uncommon features. For starters, the polyphony is nearly limitless. You can do pedal-down glissandi forever and never run out of notes. Also, you're able to customize the piano's realism in ways that are different from traditionally sampled instruments.

For instance, you can select from seven lid positions. I wouldn't say that they sound exactly like you are raising or lowering a piano lid, but it does change the piano tone in subtle and appealing ways. And there are many more parameters, such as 10 Key-Off-Noise settings and 10 Key-Off-Resonance levels. You can also dial in Cabinet Resonance, Soundboard types, and a Duplex Scale that lets you tweak the levels of sympathetic vibrations. They all enhance the instrument's timbre palette is musically useful ways.

There are 13 piano and two quality harpsichord presets that will cover all your ballad, rock, and old-timey needs. And the Ambience button enriches the piano's authenticity with a moody reverb presence. You can crank up Ambience on any sound, but it particularly illuminates the pianos and EP's.

EP's and More

Roland's electric pianos are always fun and funky, and this 16-member batch is no exception. From the 1976 Suitcase Rhodes to the wonderful Wurlys (Model 200 et al), you may get lost in your inner Billy Preston. My front-runner is the VR EP 1, which has an abrupt velocity jump from mellow to wicked but is so funky and physical that you could be tempted to abandon exploration right there, but don't. Visit Registration 3-5 SA-EP and swoon in the lushness.

The 15 organ presets are equally rich and complex. And while you wouldn't want to live there all night, it would be a joy to play on the one or two organ tunes a set that most of us are asked to do. There are a few righteous church tones and an assortment of clonewheels that you can easily step through because Roland has taken the time to balance the volumes of all their presets. Be advised that when you step into the Registrations from the Tone presets, the volume bumps up and you have to make a quick two-finger adjustment to the Part faders.

As you'd expect in an axe costing well over a grand, the Strings, Pads, and GM assortment (more than 270 additional tones without much fluff) are comprehensive and include a few hidden gems, such as the one called Harpiness for your angelic arpeggios, as well as some recording-worthy drum kits.

The Experience

The FP-90 has two 2-way, bi-amped speakers (25W/5W per side) built into the top of the console, capable of 107 dB of clean, solid amplification. I took it out on a couple of under-a-hundred-person gigs (one going through a pair of Barbetta 41c's and the other through Yamaha DXR 10" P.A. speakers) and tried playing a song with just the built-in speakers. Even though the keyboard is louder than many digital pianos, you still need the beef and directionality of a separate amp for the sound to reach the back seats. But the onboard sound system is perfect for choral support, rehearsals, teaching, and gigs in small venues.

And here's something for the singer/songwriters: Let's say you're on one of these intimate gigs and you're killing like never before. You can plug in a mic, set your levels and effects, and record every song as a 44.1kHz, 16-bit WAV file. Although this feature isn't new to consumer-level keyboards (Casio offered it five years ago in their WK-7500 line), Roland has made it easy to use and provided excellent sound quality. I don't want to oversell, but you can record a whole night's show on an 8GB thumb drive and have your selected tracks up on SoundCloud before you go to sleep.

The Verdict

The FP-90 is all about Quality Meets Convenience. True, you can get an excellent-sounding, authentic-feeling slab at half the weight and price; this instrument tips the scales at a substantial 52 lbs. But I don't know of a keyboard that lets you get to top-tier sounds faster, adjust levels and EQ more intuitively, and record a piano/bass/vocal more easily that the FP-90, all without plugging in an amp. ♫

KORG

ARP Odyssey Module and ARP Odyssei for iOS

BY GEARY YELTON

FORTY YEARS AGO, THE ARP ODYSSEY AND MINIMOOG MODEL D WERE THE Les Paul and Stratocaster of monophonic synthesizers. The Minimoog may be better known today, but the Odyssey always had some hefty advantages. Although the original Model D had one more oscillator and seven more notes on the keyboard, the Odyssey featured oscillator sync, pulse-width modulation, ring modulation, sample & hold, a dedicated LFO, and more stable tuning. Those additional features made it more sonically versatile, with a range of timbres and gorgeous tone that was irresistible to many musicians back in the day.

I like to say I cut my teeth on the Odyssey, because it was the synth that occupied me most when I was just starting out. When Korg resurrected it a couple years ago, I was less than enthusiastic about the new model's narrow keys. I wanted a module I could use with my existing MIDI keyboards, and now my wish has been granted.

The ARP Odyssey Module combines some of the best features of all three major revisions of the original—distinguishable by the colors of their front panels—in a tabletop model that is too wide to rackmount. It's almost identical to the original, minus the keyboard. The module is entirely analog, with no digital capabilities other than MIDI over USB and DIN ports. You can choose from two models: a white one that looks like the first Odyssey and a black one that looks like the final revision.

But wait, there's more! Apple iPad and iPhone owners can join in the fun, too, with ARP Odyssei, an iOS app that accurately emulates the updated classic. It has almost all the hardware's features and adds an arpeggiator and seven types of effects. Best of all, it can store and recall patch programs. Because the module and the app have so much in common, most of this review pertains to both, and I'll touch on differences when appropriate.

Hardy Hardware

I've always appreciated the clarity of the Odyssey's layout. Instead of knobs, all continuously variable controls are well-labeled slide potentiometers that feel substantial and smooth. Twenty-three 2-position slide switches toggle between functions that determine modulation routing, select pink or white noise, and so on, with a 3-position slide switch for filter type and a 3-position lever that transposes tuning two octaves up and down.

The back panel has monophonic outputs on 1/4-inch and XLR jacks, a 1/4-inch input for processing external audio, a 1/4-inch headphone jack with its own level knob, a MIDI In jack, and a USB connection. Also in back are 3.5mm ins and outs for control voltage, gates, and triggers, which means the Odyssey can interface with your modular rig. Additional jacks connect an expression pedal for volume and a footswitch for portamento. Unlike the original, the power supply is a wall wart.

First-generation Odysseys have no dedicated vibrato control and a potentiometer knob for pitch bend. The module has a trio of stiff rubber pressure pads called the Proportional Pitch Control (PPC), first introduced in the second revision. They require substantial pressure to engage and don't transmit MIDI. The left pad bends pitch down, the right pad bends pitch up, and the middle pad introduces vibrato. Their ranges are not adjustable, and controlling pitch accurately is virtually impossible beyond a few semitones, but the vibrato pad works well.

Block Diagram

The Odyssey Module has two voltage-controlled oscillators (VCOs) that generate sawtooth and variable-width pulse waves. The instrument is duophonic, so that pressing two keys plays the VCOs at different pitches—especially effective with oscillator sync and ring modulation. You can switch

VCO 1 out of audio range to use as a modulation source for sample & hold. Modulate the frequency of either VCO with the LFO, ADSR, or sample & hold, and modulate pulse width with the LFO or ADSR. (Modulating a synced oscillator with an envelope is a classic sound Odyssey players made famous.) The LFO generates sine or square waves up to 20 Hz. You can route either envelope generator, ADSR or AR, to the filter or amplifier and trigger either envelope with the keyboard or LFO.

Over the course of the Odyssey's original nine-year run (1972 to 1981), ARP changed the design of its voltage-controlled lowpass filter at least three times. The Odyssey Module lets you switch between filter responses reproducing the three revisions. The VCF can self-oscillate, and a switch engages overdrive. A separate, nonresonant highpass filter has a slider to manually change its frequency, but no modulation inputs.

The sample & hold (S/H) mixer combines signals from the oscillators and noise generator and routes the combined signal to the S/H circuit. Once every LFO cycle or whenever you press a key (depending on the setting), S/H takes a snapshot of an instantaneous voltage from that signal and holds it until the next cycle or key press. The Odyssey uses that voltage to modulate the VCF or either VCO. In the final stage, the Odyssey routes audio signals to a mixer that lets you balance the inputs, select oscillator waveforms, and choose noise or ring modulation.

Odyssei

ARP Odyssei graphically re-creates the Odyssey's third revision—black with orange highlights—and comes with 99 factory presets. It runs on the iPhone 5s, iPad Air, iPad Mini 2, and newer models.

Although Odyssei duplicates the module's sliders and switches, it repositions some of them to use space efficiently (see Fig. 1). This is especially true on the iPhone, which distributes all its controls across four pages. The Voice Assign switch lets you select monophonic, duophonic, or polyphonic mode. The app has a Drive Gain slider instead of the module's VCA Gain slider and Drive switch, and an additional switch and slider route MIDI velocity to either the amplifier or filter.

You can toggle between a simple 37-note keyboard and a 26-note keyboard with a pitch-bend wheel, mod wheel, and octave-shift button (giving it a 9-octave range). You can also replace the keyboard with two assignable x-y control pads.

Tapping on the program name displays a list of all the included presets and any user programs you've saved. Tapping the Page Select button on the iPad replaces the front-panel controls with controls for a 16-step arpeggiator and six effects types—3-band EQ, distortion, reverb, phaser, stereo delay (with independent left and right delay times), and chorus/flanger/ensemble, each with a handful of user parameters. The arpeggiator and effects are on separate pages on the iPhone. The arpeggiator is fairly sophisticated, with modes that skip selected steps and the ability to repeat chords as well as note patterns.

Once installed, Odyssei gives you the option of two in-app purchases, Rev1 and Rev2, for $5 each. Rev1 resembles the white-faced model from 1972, and Rev2 resembles the black-faced model with gold trim from 1977. Although the app offers the same three lowpass filter types as the hardware module, Rev1 and Rev2 each come with 49 presets that focus on their characteristic filters. Otherwise, all three versions are identical, and the only reason to spring for the in-app purchases is if you want the additional programs, which are excellent.

Double Your Pleasure

With the Odyssey Module in my studio and Odyssei on my iPad, I wanted to know just how much they sound alike. I routed them both through an iConnectAudio2+ interface, called up a preset in Odyssei, and matched the preset's slider and switch settings on the module's sliders and switches. On one preset after another, the results were close, but with a few minor tweaks, they sounded practically identical. Something about the hardware oscillators sounded subtly more solid, and viewing the recorded waveforms in Logic Pro confirmed that they were slightly different no matter how carefully I adjusted parameters. Still, I was surprised that a $30 app could sound so convincingly like a $600 synth.

Patch memory gives Odyssei a tremendous advantage for all Odyssey owners. Although the Odyssey doesn't store parameter settings, the app can store thousands of Odyssei programs. When you create a program on the module you'd like to recall in the future, simply duplicate all its settings in the app, give the program a name, and save it. When you recall it, just reverse the procedure and duplicate the app's settings on the hardware. That approach is much more effective than simply transcribing parameter values, because you get to hear a very close approximation of the sound before you manually recall it on the module.

I had hoped to control the module with the app's arpeggiator, but Odyssei doesn't transmit MIDI. I also hoped I could process the module's output through the app's effects, but unlike the hardware, Odyssei doesn't have an audio input. It appears in Audiobus only as an input and not as effects.

Best of Both Worlds

I'm excited about both reincarnations of an old favorite. With a choice of three filter types, the Odyssey Module expands on the vintage Odyssey's functionality and timbral range. It really captures the classic ARP sound, and I love the immediacy of its controls. The Odyssei app comes stunningly close to capturing the same sound and functionality, and it features lots of terrific presets you can re-create if you have the module, too. My advice? Get the app, but get them both if you can. ♫

Fig. 1: The Korg ARP Odyssei for iOS models the sound and circuitry of a groundbreaking analog monosynth, adding program memory, an arpeggiator, effects, and polyphony.

Snap Judgment

ARP ODYSSEY MODULE

PRO Outstanding sound. Excellent timbral range. XLR output. CV I/O. Solid feel.

CON No patch memory. Too wide to rackmount. Monophonic. PPC pads are no better than they ever were.

ARP ODYSSEI FOR IOS

PRO Authentic sound and functionality. Polyphonic. Velocity sensitive. Sophisticated step sequencer. Good effects. Unlimited program memory.

CON No audio input or MIDI data output.

Bottom Line

Two first-rate reproductions of a classic monosynth.

Korg ARP Odyssey Module $599
Korg ARP Odyssei for iOS $30
korg.com

DESKEW TECHNOLOGIES

Gig Performer

BY STEPHEN FORTNER

PLAYING SOFTWARE INSTRUMENTS LIVE IS NOW A MATURE PRACTICE. TODAY'S better laptops can handle the studio-level CPU and storage needs of today's best instrument and effect plug-ins. Add a good audio interface and observe a few guidelines, and worries about audio glitches and latency become largely a thing of the past. But when it comes to host software that's geared for live performance (e.g., not a DAW), the pickings have remained slim. Apple MainStage has commanded the big slice of mindshare in recent years, but some find its channel strip-based approach still too DAW-like for the stage. Besides, what if you're on Windows? Relative newcomer Gig Performer hopes to be your solution.

Organization

Gig Performer (GP for short) is a cross-platform (Mac OS 10.9 or later; Windows 64-bit with OpenGL graphics card) host program that supports VST plug-ins on both platforms as well as AU on Macs. This is an immediate convenience if you want to stay Mac but migrate from MainStage. If you've bought all your plug-ins for Pro Tools, AAX support is said to be forthcoming.

Central to GP is the Rackspace. If your gig needs are simple—say, piano, organ, and pads—you could devote a single Rackspace to your entire set. If they're more varied and multi-timbral, you'd use one Rackspace per song. Stepping through Rackspaces is glitch-free even if the next tune in your set list uses completely different plug-ins, and the recent addition of "patch persist" (as of version 1.2) means that sustained notes won't cut off when you change Rackspaces. GP makes this work across all plug-ins, which is pretty slick.

"Variations" on Rackspaces use the same plug-ins with different entry settings (e.g., "scenes" by a more common name). A GP project file containing one or more Rackspaces is called, fittingly, a Gig. A Rackspace has two main views: Panel and Connections. The Connections view is where you'll start setting up your virtual keyboard rig, so let's go there next.

The Connections View

GP's developers saw the mixer-like sends and buses of other host software as non-optimal for keyboard players, and their alternative is a sort of "virtual modular" canvas where you cable together instruments, audio effects, and MIDI and audio I/O in any way you like. Users of Plogue Bidule will immediately feel at home, and comparisons to Logic's Environment layer suggest themselves, but GP's interface is easier on the eyes and, for my money, more intuitive.

The umbrella object here is a Block, which is a color-coded, um, block that can represent a plug-in, your MIDI controllers, your audio interfaces, or internal utilities such as a fader/panner and a MIDI filter. Little semicircles around the Blocks' edges are patch points—orange for MIDI and blue for audio—and you simply drag from one to the other to make a connection. In an initially blank project, Blocks for any audio and MIDI devices I had connected, whether USB class-compliant or using driv-

Snap Judgment

PROS Cross-platform. Hosts both VST and AU plug-ins. Quick MIDI learn. OSC support. Visual, object-oriented approach is easy to learn and almost limitlessly flexible for creating custom multi-plugin setups.

CONS No quick way to open full plug-in windows from main panel view. Can't create macros (e.g. single panel knobs that control multiple parameters).

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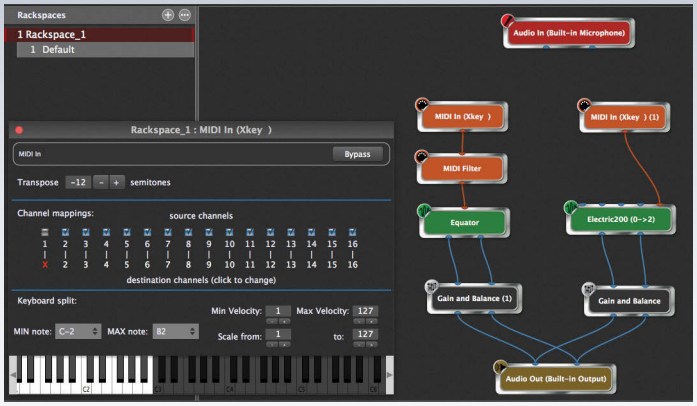

Fig. 1. In this screenshot, I set up a quick bass/EP split between Roli Equator and Waves Electric 200 in the Connections view.

ers I had installed prior, just showed up sporting the correct number of inputs and outputs.

Right-clicking brings up a menu of all your plug-ins. Select one, and a new Block appears. Double-click on that Block, and you'll either get the full plug-in interface or, if it's an I/O or internal Block, a window with all relevant settings. Of course, any changes you make at this inside level, such as which preset a given plug-in is playing, are saved as part of the current Rackspace.

I had some early head-scratching moments when trying to set up keyboard splits and layers using multiple plug-ins. Then the lightbulb went on: For a split, just create a separate MIDI-in Block for each zone. You can have as many as you need even for one hardware device. Open it up, set the key range, transpose/octave shift, and channels as desired, then patch the MIDI-in to the Block of the plug-in you want to play in that zone (see Figure 1). To make a split within a single multi-timbral plug-in (e.g. Omnisphere, Kontakt Player), patch in multiple MIDI-in Blocks set to different channels. A straight layer is even simpler: Just patch a single MIDI-in Block to multiple plug-ins.

In both the MIDI and audio domains, there are virtually no restrictions on patching a single source to multiple destinations and vice-versa. This accounts for a huge part of GP's flexibility. Under the hood, a great deal of busing and routing management is going on, but GP makes it all so *visual* that the steepest part of your learning curve will likely be unlearning how other software may have conditioned you to think.

The Panel View

All of the above is pertinent to building your setups. The Panel view is what you'll be looking at when actually playing. Here, you can create "rackmount" panels (mimicking hardware modules of 1U to 4U in height), then drag in Widgets such as knobs, sliders, organ drawbars, and switches to create a custom user interface that operates all of the plug-in parameters you want to tweak in live performance while keeping the set-it-and-forget-it majority out of sight. In most MainStage use cases, the analogous Performance pane is a graphical mirror of your hardware rig. Here, it's, well, anything you want.

For starters, there's no one-to-one correspondence between rack panels and underlying plug-ins. This is initially counter-intuitive but quickly proves useful. As a matter of housekeeping, you could follow a "one panel per plug-in" rule as you configure your Widgets. You could just as easily build a single panel with knobs and sliders mapped to parameters in different plug-ins, perhaps on a category basis: One rack panel might control all the filters in the current Rackspace, the next, all the envelopes. It's up to you.

Click on a Widget while in Edit mode, and you'll see inspector panes for its properties (range scaling, polarity, etc.) and for which plug-in and parameter it controls. A Learn mode allows one-click association between the Widget and the target parameter in the plug-in's interface. This worked reliably across every AU and VST plug I threw at it. There's a separate Learn function for mapping Widgets to hardware controls.

Drag-select multiple Widgets, and up pops a menu of appearance and layout tools such as colors, custom captions, and object alignment. You can't yet save multiple widgets as a template, but you could copy and paste them to an otherwise inactive rack panel for later copy-pasting back into a Rackspace. I did exactly this so that I'd have to create a bank of nine organ drawbars only once.

As in the Connections view, there's a little getting-the-hang-of-it, but only a little, and once you do, you positively fly at crafting gig-ready Rackspaces. I do have a couple of wants, though. First, I couldn't find any way to make a single Widget control more than one parameter at a time, either within one plug-in or across several. This sort of macro capability seems elemental for performance gestures at least some musicians might make, for example, sweeping the filter cutoff on all your soft synths. (Workaround: MIDI-learn multiple Widgets to the same hardware control.) I suggest this as priority one for the next update.

Second, when the Panel view is not in Edit mode, there's no quick click to bring up a plug-in's full interface. I understand that this is a by-product of the Panel view not being about individual plug-ins but rather how you're using them collectively, but I can see being in the heat of battle and wanting to adjust something I hadn't thought to create a Widget for.

Performance

Deskew claims that Gig Performer conserves CPU cycles compared to MainStage running the same complement of plug-ins, and some users on the Keyboard Corner forum (forums.musicplayer.com) corroborated this. I'm happy to report that my tests did as well. My late 2012 MacBook Pro (2.3GHz Core i7, 8GB RAM, 500GB internal SSD upgrade from Other World, external Thunderbolt SSD for sample libraries) not only metered less CPU usage, but physically felt less warm when shaking a cocktail of Roli Equator, u-he Diva, Waves Electric 200, Native Instruments Monark, and the C. Bechstein grand piano library running in Kontakt.

Open Sound Control (OSC) has gained so much popularity that you no longer have to be a friend of Peter Kirn to use it, so it's nice that GP offers full support for adding custom touchscreen controllers from, say, an iPad running the Lemur app.

The real killer app, though, may be that you can run multiple instances—not just of plug-ins, but of Gig Performer itself—on the same computer. Applications for this include managing the top and bottom keyboards in a two-tier bar-band rig, separately (as many of us do with hardware synths), or having multi-bandmate access: As you play your virtual keyboard rig, your guitarist could run through amp modeling plug-ins, and your worlds would exist in separate spaces without any one GP setup getting too complicated. Just keep the laptop at your station so you can turn the guitarist down.

Conclusions

I haven't encountered a live-oriented host program that combines radical open-endedness with relative ease of use as effectively as Gig Performer does. It's more flexible than MainStage where it counts, given the multiformat support and the no-worries routing free-for-all in the Connections view. Cantabile (Windows only) and Live Professor (Mac/Windows) have certain indica of more mature products, such as integrated playback of audio cues. But for keyboard players who gig across a variety of bands and styles, Gig Performer's thinking hits a singular sweet spot. We might even dare say it "thinks different." ♫

Bottom Line

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ARTURIA MiniLab Mk II

BY FRANCIS PRÈVE

WHEN IT WAS FIRST INTRODUCED IN 2013, ARTURIA'S MINILAB MADE QUITE a splash, thanks to its solid construction, great feeling drum pads, and generous complement of knobs. The company's latest release, the MiniLab Mk II retains those features, but improves on them in subtle yet important ways, making the update worthy of a closer look.

For starters, the controller is a tad more compact, due to Arturia's repositioning of the mod and pitch-bend touch-strips to the upper panel of the keyboard. Whereas some traditionalists may prefer their original location on the left, I didn't have a problem with the new position, and the improved footprint is a space saver for those who like to keep their rig small enough to fit into a backpack. It's also worth mentioning that the unit's metal chassis inspires confidence, though it is heavier than a plastic-cased controller.

Where the Action Is

The keyboard action is another standout. As a reviewer, I've played more than my share of portable controllers, and the MiniLab Mk II's mini keyboard feels better than most of its competitors. I was immediately impressed by the action, as well as the velocity behavior, especially in conjunction with the included UVI Model D Grand Piano. There is even a footswitch jack for adding a sustain pedal.

While many portable controllers offer eight rotary controls, Arturia ups that count to 16 and has made two of them clickable, which is nice for toggling synth parameters. This is particularly evident when using the MiniLab Mk II in conjunction with the bundled Analog Lab suite of vintage synths. Granted, it's the lite version, but even the slimmed down selection of patches hits all of the sweet spots. It includes intelligent macros for customizing your patches, and it sounds wonderful thanks to its basis in Arturia's top-notch V Collection.

The eight drum pads have a great feel and serve a few purposes beyond simple velocity control of drums and percussion. When the Shift button is held down, the pads serve as preset selectors for the MiniLab Mk II. Additionally, the pads integrate tightly with the Analog Lab software. Here, a selector switch labeled 1-8 / 9-16 alternates the function of the pads between MIDI notes and additional macros that control the software in specific ways. For example, when 9-16 is active, you can advance through presets, clear the preset search filters, or switch the behavior of the encoders.

In addition to the Analog Lab integration, the pads also work well with the included lite version of Ableton Live, allowing you to launch clips and scenes. In practice, these pads offer a surprisingly intuitive way to access the controller's various features and are quite handy for live performance.

Table That

While the portable controller market is incredibly competitive, Arturia's MiniLab Mk II offers a wealth of compelling features at a very affordable price. The mini keyboard feels great, it is covered in knobs, and the pads do more than just trigger drums in a colorful fashion. It also comes with a truly useful selection of bundled software that includes Arturia's impressive Analog Lab Lite, which integrates beautifully with the Mk II's array of control options. UVI's Model D Grand Piano is no slouch either.

All in all, if you're looking for a versatile controller for your home studio that won't break the bank and fits nicely into a gig bag, the MiniLab Mk II truly stands out from the pack. ♫

Snap Judgment

PROS Enhanced portability. 16 rotary controllers, including two clickable pots. Eight velocity-sensitive drum pads (with RGB lighting) double as integrated controls for the bundled software. Roadworthy construction. Includes Analog Lab Lite, UVI Grand Piano, and Ableton Live Lite.

CONS Touch strip controllers may not suit some players.

Bottom Line

A leader among the pack of low-cost MIDI controllers.

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WAVES

Electric 200

Keyboard K KEYBUY AWARD

BY STEPHEN FORTNER

WE CAN THANK THE WURLITZER ELECTRONIC PIANO—SO NAMED EVEN THOUGH its sound was generated mechanically and the only electronic aspect was its built-in amplification—for one of the two iconic electric piano sounds of the 20th century. Where the Rhodes used cylindrical tines as half of an asymmetrical tuning fork-like assembly, the Wurly's resonators were flat metal reeds. This resulted in a rich, somewhat clarinet-like tone that was closer to a triangle wave than the Rhodes' flutey almost-sine. The Wurly canon includes Pink Floyd's "Money," the Heartbreakers' "Breakdown," and "Bloody Well Right" by Supertramp. Now, Waves has come out with a software version that's not merely great for the price—it's bloody well great, period.

Electric 200, which works as a stand-alone instrument or plug-in, offers two sample sets that are switchable on-the-fly: a rounder, mellower tone and a more nasal, reedy tone with additional bark and bite. At first I thought these might have been from a model 200 and 200A (which improved upon the amplification and noise shielding), but in fact they're two different 200s. Earlier Wurlitzers, such as the 120 (non-unanimously agreed upon as the piano Ray Charles played on "What'd I Say") and 140 aren't represented, but you can get close to their more muted sound by trying out negative values of the Formant knob.

Speaking of controls, the complement is identical to Waves' Rhodes emulation, Electric 88 (reviewed December 2016). In fact, you can use E88 presets in E200.

That Formant knob emphasizes or attenuates various harmonics; the subjective effect is like having presets-only access to a surgical multiband EQ. Next is the sample set toggle, then the four sliders for main tone, hammer, key-release samples, and mechanical noises. The one-knob compressor is followed by the amp simulation with its dynamic and condenser virtual miking options, then the bass-mid-treble EQ.

As in Electric 88, the effects rack comprises tremolo, auto-pan, phaser, chorus, and reverb. Effects with a Rate knob use its left side for host-tempo-syncable divisions (including triplets), and its right for free-running times in Hz. Again, the impeccable sound quality shows that these effects inherit a lot of high-end code from flagship Waves effects plug-ins.

Turning all this stuff off proves that Electric 200 doesn't need to lean on effects for authenticity: These are some of the best Wurly sounds I've heard short of the real thing. The Wurly action was more complex than that of the Rhodes, with a geometry similar to a grand piano action. This resulted in a wide dynamic and harmonic range in response to finger velocity, and Electric 200 deftly captures the subtleties in this regard. That said, overall I preferred the mellower "Inst 1" sample set whereas the bite of "Inst 2" could run away from me if I played too heartily. Your mileage may vary.

Effects come more into play for capturing how the Wurlies on classic songs were processed and recorded, and the factory presets do an admirable job of showing this off. Highlights include "Ray Plays the Blues," which nails that 120 sound I mentioned; I actually preferred "Fun Ra" for playing Supertramp licks over other patches whose names suggested that band; "Smooth Space Filler" was a natural for the Steely Dan "Black Friday" part, even though that was actually played on a Hohner Pianet.

If you need a virtual instrument dedicated to Wurly sounds, with much more sampled-in detail than the Wurly offerings in a workstation or broader keyboard library, Waves Electric 200 swings so far above its price point it's not even funny. ♫

Snap Judgment

PROS Spot-on, realistic, detailed Wurly sounds. Just-right factory presets. Studio-quality effects. Dead-simple to use.

CONS It would be nice to have sample sets for older, more rare Wurly pianos such as the 120 and 140 series.

Bottom Line

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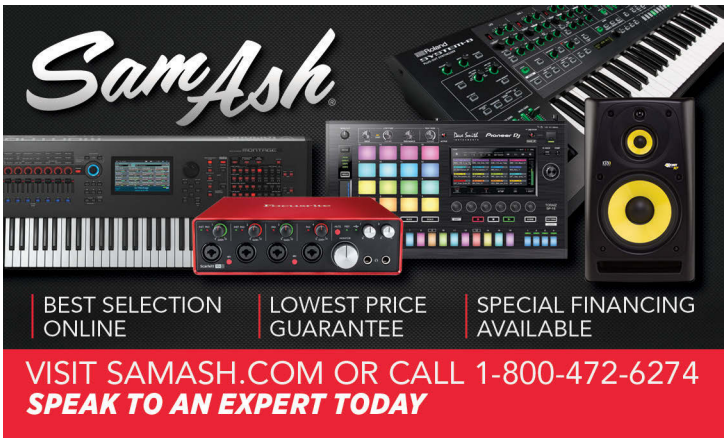

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5 THINGS I'VE LEARNED ABOUT Playing Keyboards on Broadway

BY MATT BECK

Matt Beck is a multi-instrumentalist who plays keyboards and guitar with artists such as Matchbox Twenty, Rob Thomas, and Rod Stewart. He also recently landed a spot in the pit orchestra of the new Broadway musical version of *Amelie*. Beck's most recent solo outing is *Anything Which Gives You Pleasure*. Find out more at mattbeckmusic.com.

ONE OF THE FIRST THINGS I DID WHEN I MOVED TO NEW YORK CITY IN THE late 1990s was to look for ways to stay gainfully employed. I soon realized that many, if not most, professional musicians I knew were playing or "subbing" in the pit orchestras of Broadway shows at least some of the time. And for good reason: Broadway pit work is one of the few potentially long-lasting sources of steady income for musicians. Broadway shows typically have an eight-show workweek with a single day off (usually a Monday or Wednesday). A typical work day, once a show is up and running, is around three hours, and you receive basically full-time pay as well as health and dental insurance, and pension contributions. And from a musical standpoint, it's rare that musicians get to perform with an orchestra. There are also more rock and pop shows in production these days that require musicians to play in many contemporary styles like funk, soul, hip-hop, and jazz. So what does it take to be a Broadway keyboardist? Here are five things to know so you'll be prepared for this exciting world of work.

1. Be Versatile

One of the first Broadway shows I started playing in was *Rent*. I knew a little bit about it: that it was hugely popular and that it was basically a rock show. I thought to myself, "How hard could this be? I grew-up playing rock 'n' roll!" So I went to check it out and I was astounded at all the different genres of music in it. I was hearing punk, tango, pop, soul, house, rock, folk, and more. It was quite an eye opener, and I went home with a new outlook on Broadway music. The lesson is, be ready to play as many different musical styles as you can think of, as *authentically* as possible. The more styles you are fluent in, the more work you can do in the theater.

2. Be a Better Reader

When I was playing in the pit of *Spider-Man: Turn off the Dark*, I remember receiving a phone call from someone who wanted to come and "sub" for me. He was really into U2 and knew that Bono and The Edge had written the music for the show. After I told him about the score and what it entailed, he said that he was going to be memorizing the music. I knew right away that this wasn't going to be the right work for him. There are typically more than 20 pieces of music that make-up a Broadway score, and almost all of them are overwhelmingly "through-composed," as they are meant to accompany what is happening onstage. You *must* be a good music reader if you are going to do Broadway work. Especially during the rehearsal period, scores change daily as edits and changes are being made to the choreography and story line. The good news is, there's no special talent needed for reading; it's a skill and if you work a little bit on it daily, you will see huge improvements.

3. Have Good Time

Having an almost intuitive sense of time is of the utmost importance on Broadway. It means listening so deeply to everything that's happening around you that you can be aware if things start to shift. Few sounds are worse than a musician who is not playing together with his or her section. Work on your time by practicing with a metronome, recording yourself, and listening back to critique your feel. It's also important to remember to *relax*. Nerves can always be a hindrance, but being able to breathe through any tensions and settle in is very important.

4. Follow the Conductor

In general, it's important to keep your eyes glued to the conductor. You never know when things might change, when something might happen onstage that's different from what the conductor was expecting. It gives the conductor confidence in you to know that you are giving your undivided attention (in case he or she needs to give you a note on dynamics or tempo at the spur of the moment). This means that the keyboard player needs to be able to play without looking at the hands, in order to maintain good eye contact with the conductor.

5. Have Discipline

Every aspect of a Broadway show is painstakingly honed for years until it is "frozen," meaning there won't be any major changes happening for a very long time. Once a show is frozen, it's the musician's duty to honor what is written and play it true-to-form every time. Now, sometimes in shows, the music is structured so that the player can insert things like solos, vamps, and comping. In that case, it's acceptable to change things as the music warrants it. More times than not, though, the music is written so that it can be played the same way every time, because that's what works with what's happening onstage. Discipline means playing things the same way time and time again. The musicians who do this the best are the ones who are always asked back, and asked to do other gigs within the Broadway realm. ♫

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- 123 dB dynamic range on balanced analog outputs
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- Thunderbolt and USB 3.0 support for both OS X and Windows
- 32 & 34 channels of I/O with DSP mixing and effects processing

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SUPERSPEED USB3

IEEE 802.1 AVB/TSN

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